THE IMPACT OF INNOVATION IN JORDANIAN CHEMICAL AND PHARMACEUTICAL INDUSTRIES ON EXPORT PERFORMANCE

By
Ibrahim Mohammad Issa

Supervisor
Dr. Hani Al-Dmour, Prof.

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Faculty of Graduate Studies
University of Jordan

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COMMITTEE DECISION:

This Thesis (The Impact of Innovation in Jordanian Chemical and Pharmaceutical Industries on Export Performance) was successfully defended and approved on Wednesday, the 10th of August of the year 2011.

Examination Committee	**Signature**
Dr. Hani Al-Dmour, (Supervisor) Prof. of Marketing	--------------------------------
Dr. Amjad Abu Elsamen, (Member) Assist. Prof. of Marketing	--------------------------------
Dr. Talib Awad, (Member) Prof. of Economics	--------------------------------
Dr. Shafig Haddad, (Member) Prof. of Marketing (Applied Science Private University)	--------------------------------

DEDICATION:

I dedicate this thesis to my family, especially…

- To my father and my mother for instilling the importance of hard work and higher education;

- To my wife, my brothers and my sisters

ACKNOWLEDGMENT:

First of all, I would like to express my gratitude and acknowledgement to my supervisor Dr. Hani Al-Dmour, for his valuable guidance and precious assistance.

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And last but not least, I would like to appreciate all respondents who answered the questionnaires and made this research possible.

Researcher,

Ibrahim Issa

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ABSTRACT

Innovation has long been considered an important factor for creating and maintaining the competitiveness of the firms. Common knowledge stands that innovation is the cause of the increase of exports. However, contradicting empirical evidences are reported in the literature on the relationship between innovation and export performance. In this research we examine whether innovation performed by Jordanian chemical and pharmaceutical industries enhances their export performance.

Based on research objectives, a structured questionnaire was developed to collect the needed data to test the developed hypotheses. Data were collected from twenty two companies, representing a sixty-five percent response rate. Data were analyzed and hypotheses were tested using various analytical methods.

Research findings indicate that there is a statistical significant relationship between innovation and export performance for the sample under study; mainly for research and

development, marketing data base, management (atmosphere conductive to innovation), promotion and product (quality). Based on the results, several recommendations are suggested.

Chapter One:

1. Introduction
2. Problem statement and research questions
3. The purpose and objectives of the research
4. What distinguishes this study from previous studies?

1.1 Introduction:

This research examines the process of innovation within chemical and pharmaceutical industries and its effects on export performance, focusing, in particular, on a sample of firms in Jordan. The trend of the last several decades towards increased integration of global markets, or globalization, has meant that many firms are experiencing continuously increasing pressure to remain viable as their markets expand, and they begin competing with a larger number of firms.

Jordan has made great steps in development at all levels and in different domains, including industrialization. Investment promotion and attraction policy in force as well as the investment climate and security stability in Jordan have contributed to establishment of different industries, including chemical and pharmaceutical industries. The spread of those industries was accompanied by an active movement for importing raw chemicals and exporting processed products of such materials.

1.2 Problem Statement and Research Questions:

Over the past two decades, the growing liberalization and integration of global trading systems, the elimination of political and economic boundaries, the pervasive developments of communications technology, and the rapid globalization of products and services are rapidly transforming the global business arena (Lee and Habte-Giorgis, 2004).

All of that have put pressure on Jordanian chemical industry to find some new markets and it was leaded by pharmaceutical industry since Jordanian pharmaceutical exports have grown from about $49 million to more than $280 million, making Jordan now the leading Arab drug exporter. So we will try to explore the relationship between innovation with all of its elements and export performance. However, this connection has not been deeply addressed, and this relationship constitutes the ground for our main research question:

Is there a relationship between innovation and export performance of the firm?

So the questions that we shall focus on include the following:

1. Does the innovation of the firm improve the export performance of the firm?
2. Does the increase in export performance of the firm imply more innovation for the firm?
3. What are the most important factors of innovation which has the maximum effect on export performance?

1.3 Objectives of the Research:

The main objective of this research is to explain the relationship between innovation and export performance in one firm, and asses these relationships through explorative research.

Precisely, the main research objective of this investigation is to evaluate the Jordanian chemical and pharmaceutical firms in terms of patterns of innovation and export performance, in particular, to find out the relationship which exists between these two processes and the factors that influence this relationship.
And this investigation will contribute to the scientific literature but it will also be very useful to managers, as it can be taken as a guide in order to improve their export performance by innovating, depending on the results of this study.

1.4 What Distinguishes This Study From Previous Studies?

This study is considered one of the first studies that investigate the impact of innovation on export performance of the Jordanian chemical and pharmaceutical industries. Which will build the base for further studies and help chemical and pharmaceutical firms to understand how innovation can affect their export performance.

Chapter Two:

1. Jordanian chemical and pharmaceutical industries
2. Literature review
3. Theoretical framework
4. Research hypotheses

In this chapter the researcher will give an overview on Jordanian chemical and pharmaceutical industries, innovation concept, previous studies regarding innovation and export performance, theoretical framework and finally research hypotheses.

2.1 Jordanian Chemical and Pharmaceutical Industries:

2.1.1 Chemical Industry:

The chemical industry comprises the companies that produce industrial chemicals. It is central to modern world economy, converting raw materials (oil, natural gas, air, water, metals, and minerals) into more than 70,000 different products.

Polymers and plastics, especially polyethylene, polypropylene, polyvinyl chloride, polyethylene terephthalate, polystyrene and polycarbonate comprise about 80% of the industry's output worldwide. Chemicals are used to make a wide variety of consumer goods, as well as thousands inputs to agriculture, manufacturing, construction, and service industries. The chemical industry itself consumes 26 percent of its own output. Major industrial customers include rubber and plastic products, textiles, apparel, petroleum refining, pulp and paper, and primary metals. Chemicals are nearly a $3 trillion global enterprise, and the EU and U.S. chemical companies are the world's largest producers.

Sales of the chemistry business can be divided into a few broad categories, including basic chemicals (about 35 to 37 percent of the dollar output), life sciences (30 percent), specialty chemicals (20 to 25 percent) and consumer products (about 10 percent), The industry includes manufacturers of inorganic- and organic-industrial chemicals, ceramic products, petrochemicals, agrochemicals, polymers and rubber (elastomers), oleochemicals (oils, fats, and waxes), explosives, fragrances and flavors and pharmaceuticals (McCoy et al, 2006).

According to the 2004 annual statistical book, Jordan total production qualities in 2004 amounted to (131.1) tons as an average standard for quantitative industrial production. Table No. 2.1 shows the quantities of chemicals produced locally, imported, and exported as per the type thereof:

Table no. 2.1: Quantities of chemicals produced locally, imported, and exported as per the type

Chemicals Type	Quantity, Produced Locally	Imports	Exports
Pesticides (Insecticides, public health and consumer use) (1)	440 Tons (2003)	968 Tons (2003)	1492 Tons (2003)
Fertilizers (2)		36707 Tons solid fertilizer, 674261 liquid fertilizer, germination means 22 million liters (2004)	301492,912 Tons*
Petroleum Products(3) - Crude Oil	3946651 Tons - (2004)	956573 Tons 4245209 Tons (2004)	-
Materials Used in Industry (2)			
- Organic Solvents		4913.4 Tons	17.1 Tons
- Alcohol		2303.2 Tons	2104.1 Tons
- Acids		9960.5 Tons	1251.3 Tons
- Gases		5013.6 Tons	212.3 Tons
- Other raw - chemicals		61777.6 Tons	210487 Tons
Consumer Chemicals: (2)			
- Paints and Dyes		7664.1 Tons	8628.75 Tons
- Paints and Construction Materials		5166.94 Tons	1623.66 Tons
- Perfumes and Aromatic Oils		533.54 Tons	187.48 Tons
- Cosmetics, Dead Sea salts			
- Shampoos		1567.7 Tons	1083 Tons
- Tooth Paste and cleaning materials		7386.75Tons 349.07 Tons	399.5 Tons 69.13 Tons
- Deodorants and Bath Fresheners		868.47 Tons	720.14 Tons
- Soap		1775.69 Tons	16408.9 Tons
- Adhesives		1267.98 Tons	1373.71 Tons
- Film Developing Materials		231.97 Tons	20.35 Tons
- Candles			
- Shoe polish		63.82 Tons	3.3 Tons
- Furniture / Floor polish		99.78 Tons	7.37 Tons
- Dish Wash Liquid		823.86 Tons	6.18 Tons
- Other Items		3049.58 Tons	1718.32 Tons

Source:

1- Statistics of Ministry of Agriculture- Pesticides Department 2005.
2- General Customs Department for the period from 1/1/2005 – 8/8/2005 (in tons)
3- Forty ninth annual report of the Board of Directors of Jordan Petroleum Refinery Company for the year 2004.

2.1.2 Jordanian Pharmaceutical Industry:

The pharmaceutical market in Jordan has come a long way since its inception in 1962 with the establishment of Arab Pharmaceutical Manufacturing Company. At present there are 17 pharmaceutical companies in Jordan. The pharmaceutical market in Jordan, like other MENA countries, is a branded market which means patented and generic pharmaceutical products are marketed under specific brand names.

The pharmaceutical sector in Jordan is primarily engaged in production of branded generics ranging from many dosage forms such as solids, semi-solids, liquids, aerosols as well as producing various under licensed products for multi-national companies. Close to 90% of the total revenues is derived from branded generics, whereas under licensed products contribute majority of the revenues of the remaining revenues. As per IMS Health, the size of domestic pharmaceutical industry in Jordan was estimated to be US$ 120mn in 2004, and it reached US$ 263.4mn in 2010. Out the total pharmaceutical market in Jordan, the share of generic drugs by value was 48% and by volume was 63% in the year 2004.

The importance of the sector in the economy can be understood from the fact that it is the second largest export industry in Jordan after garment manufacturing. Currently close to three-fourths of total pharmaceutical production is meant for exports. For the year 2006, exports of pharmaceutical products amounted to JD 211mn i.e. 7.3% of total exports. The total exports grew by 6.2% in 2006, which followed 25.4% growth recorded in 2005 (according to department of statistics – Government of Jordan).

Products of Jordanian pharmaceutical companies are already registered in more than 60 countries world-wide including developed markets like USA and EU. Arab countries are the main export destinations for pharmaceutical products, accounting for more than 80% of total pharmaceutical exports. Among the Arab countries, the major markets are Saudi Arabia, Algeria and Iraq. However the companies are now increasingly focusing on geographies like Eastern Europe (including former Soviet Union) and Africa to drive growth.

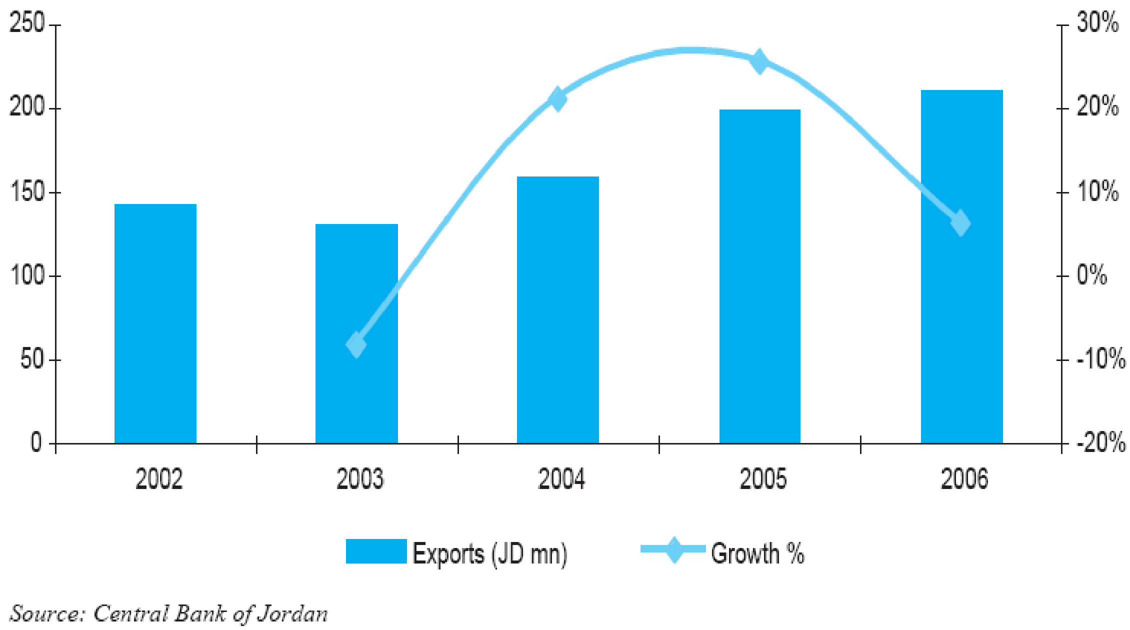


Fig 2.1: Export of Pharmaceutical Products from Jordan

Pharmaceutical sector in Jordan contributes significantly to domestic employment. The sector employs 3.5% of the total workforce employed in the country's industrial sector. The sector directly employed more than 4000 people in 2004, up from only 1700 employees in 1991. The drug industry also provides another 3000 jobs indirectly in supply and related industries (according to department of statistics – Government of Jordan).

More than 50% of total employees in the pharmaceutical sector are professional and technical staff. As per JAPM (The Jordanian Association of Manufacturers of Pharmaceuticals and Medical Appliances), the Jordanian pharmaceutical sector is the highest paid sector in Jordan in terms of average monthly wages and salaries.

The pharmaceutical sector in Jordan has been offered certain concessions by the government keeping in view the importance of the sector. There are no restrictions on foreign ownership and the sector enjoys the advantage of full repatriation of profits. The multinational pharmaceutical companies dominate significant portion of the Jordan market share. In fact their market share is more than 50% in Jordan. They are present either directly in the market or through under-licensing/contract manufacturing. Many of the multinational companies have also entered into co-marketing arrangements with the local companies. Most pharmaceutical imports are from European countries and comprised largely of those therapeutic classes not covered by local production.

2.2 Innovation Concepts:

2.2.1 What is innovation?

‘Organizational change’ and ‘innovation’ have become management “buzz-words” in the past two decades (King and Anderson, 2002)

The word “innovate” is derived from Latin, *in+novare*, that is to “make new”, to renew or to alter. Put simply, innovation is about having and applying a new idea, or sometimes applying other people’s ideas in new and novel ways. As aptly noted by Michael Vance:
"Innovation is the creation of the new or the re-arranging of the old in a new way."

Many of the products that we consider to be innovative are often based on ideas of others or a rework of existing products in a way that turns out to be a hit with consumers. In a mundane sense at many points in our lives, we are all innovators. The challenge arises when innovation is about an idea that is implemented successfully resulting in a positive outcome.

For a firm this connected to the launching new products or improving on an existing product. Sometimes it involves organizational innovation that enhances firm efficiency. At a macro level, innovation is intimately connected to economic growth and welfare.

Although innovation may be intimately linked to technology, it doesn't necessarily have to have technology at the core. If the market accepts a new idea, and a firm is successful in transforming this new idea into a product that sells in the market place, then that is innovative. However technology by making a product difficult to being imitated provides the stickiness as well as potential for much higher growth that in turn provides sustainability to innovation.

Innovation has a broad canvas, including involving social change that need not involve technology. For instance the micro-credit model (pioneered by Muhammad Yunus who was honored with the 2006 Nobel Peace Prize) which is an instrument in the fight against poverty, is also innovation.

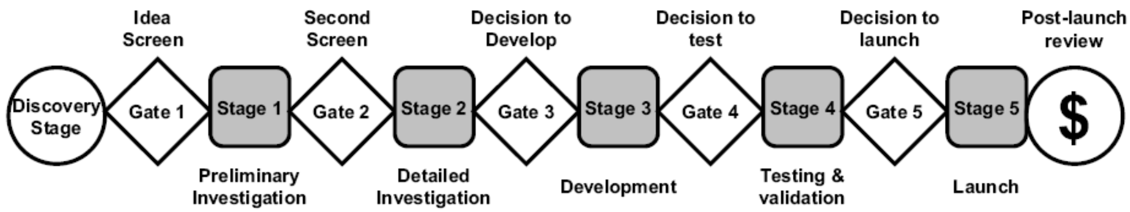
So what again is innovation? Succinctly, innovation is the exploitation of new ideas which find market acceptance, often incorporating new technologies, processes, design and best practices. The innovation process generally involves the following phases:

- having a new idea or rethinking an old one
- recognizing opportunities that exist or can be promoted
- choosing the best alternatives
- Application of the idea and the process.

In "Winning at New Products", Cooper (2001) describes a structured process for new product development. The stages involve:

- Scoping: A quick desk research phase
- Building the business case
- Design and development
- Testing and validation
- Launch stage, where the product is commercialized.

Importantly Cooper calls for the installation of gates where bad ideas get weeded out. These gates serve as checkpoints at the end of each stage, as shown in Fig 2.2.



Source: Winning at New Products, Cooper (2001)

Fig. 2.2: The Stage Gate process

For a historical definition of innovation, one must turn to Joseph Schumpeter (1939) who held technological change to be one of the major determinants of industrial transformation, and consisted of the introduction of new products (product innovation), new production processes (process innovation) and new management methods (organizational innovation).

Interestingly Schumpeter's perspective of who is an entrepreneur is exactly the same as that of an innovator. He argued that the entrepreneur is the innovator who implements change within markets through the carrying out of new combinations. The new combinations could manifest itself as the one or a combination of the following:

- The introduction of a new good or quality thereof
- The introduction of a new method of production
- The opening of a new market
- The conquest of a new source of supply of new materials or parts
- The carrying out of the new organization of any industry

Management guru Peter Drucker (1993) explicitly calls for the entrepreneur to equip himself with the tool of innovation, when he declared that:

"Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced. Entrepreneurs need to search purposefully for the sources of innovation, the changes and their symptoms that indicate opportunities for successful innovation. And they need to know and to apply the principles of successful innovation."

In a similar vein, Freeman and Soete (1997) couples entrepreneurship with innovation, declaring the latter to be:

"The first commercial application or production of a new process or product, it follows that the crucial contribution of the entrepreneur is to link the novel ideas and the market."

If one was to seek some more formal definitions of innovation, there are plenty for company. For instance the Oslo Manual of the OECD (2005) (Organisation for Economic Co-operation and Development) makes a distinction between product and process innovation as follows:

"A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics."

"A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software."

"A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing."

"An organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations."

Each researcher tends to define innovation often based on his perspective on what is the most important aspect of innovation. Hence according to the authors Tidd et al (1997), innovation is:

"A process of turning opportunity into new ideas and of putting these into widely used practice."

Whereas for Cumming (1998), the emphasis is on originality, when he defined innovation as:

"The first successful application of a product or process."

Rogers (1962): defined and characterized innovation from the user perspective, presenting five criteria for (user based) innovation:

Relative advantage: Do people think it is an improvement over what already exists?

Compatibility: Is it consistent with the values, experiences and needs of the people who might adopt it?

Complexity: Will potential users find it easy to use and understand?

Trialability: Can people experiment with the innovation before deciding to adopt it?

Observability: How easy is it for people to see its results?

Meanwhile Wikipedia, the brilliant example of what is now termed to be open source innovation, defines innovation as follows:

"The classic definitions of innovation include: 1) the process of making improvements by introducing something new; 2) the act of introducing something new: something newly introduced; 3) the introduction of something new; 4) a new idea, method or device; 5) the successful exploitation of new ideas; 6) change that creates a new dimension of performance."

The current understanding of innovation in the literature is that it embodies "a process that begins with an invention proceeds with the development of the invention, and results in the introduction of a new product, process or service to the marketplace" (Acs and Audretsch, 1990). While Fernandes et al (2004) define innovation as performing process in creative and novel fashion that improves effectiveness, and efficiency. The Australian Bureau of Statistics (ABS) also uses a definition for its surveys that involves the commercialization of new or improved products and processes (Rogers, 1998).

The alternative concepts of innovation are shown in Table 2.2 (Wonglimpiyarat, 2004; 230)

Table 2.2: Concepts of Innovation

Concepts of Innovation	**Scholars**
A process of enhancing existing technology	Rosenberg (1976), Nelson&Winter (1977,1982), Dosi (1982)
A process of turning opportunities into practical use Pavitt (1984), Tidd (1997)	Pavitt (1984), Tidd (1997)
An integrated process involving	Schott (1981), Daft (1982), Rothwell&Gardiner (1985)
Any new technologies and new processes	Rogers & Shoemaker (1971), Porter (1990), Voss (1994)

Source: Wonglimpiyarat (2004; 230)

2.2.2 Why Innovate?

In a knowledge-based economy firms must develop new products and services to increase turnover. In today's business environment, given acute competition and the overall market instability, for firms to remain competitive and profitable, they must keep developing new ideas and concepts to keep ahead of the competition. It is only through innovation that firms can create value and differentiate their products and services from that of the competition. In a global economy competitive advantage is achieved via the access to the best research and thought leaders. Liberalization of trade both merchandise as well as in financial markets, coupled with technological advances in information and communications technologies (ICTs), have greatly reduced geographic and trade barriers, leaving firms and countries ever more vulnerable to international competition. This reinforces the necessity for firms to innovate continually, adapt and create new products, services and entire business models, to compete beyond regional borders.

The correlation between innovative capacity and performance to economic development has been further strengthened over the recent decades.

Recent studies indicate that technological progress is now responsible for up to one half of the growth of the US economy (Schacht, 2000). In most countries the success and growth of small and medium sized firms is connected with innovation.

At a firm level, studies point out to a positive correlation between innovation efforts as measured by R&D expenditure to outcome. A study by the British Department of Trade and Industry (DTI) − *The R&D Scoreboard 2006*, found that the links between R&D and business performance show up in wealth creation efficiency, sales growth and market capitalization.

2.2.3 Classifications

Firms on the innovation path can choose to work from either of two starting points − creating completely new products or services (radical innovation) or they can make improvements on an existing product or service. Although not necessarily the same, incremental improvements of products can lead to product differentiation as well.

The difference between these two starting points is a central theme in research literature on technological innovation, where innovation is broadly divided into either radical or incremental innovation (Henderson and Clark 1990).

But categorizing innovation in either of the two camps has not been to the satisfaction of many researchers. It fails to capture the degree of innovation in a product, and hence much research over the last two decades has been devoted to the classification of innovation.

This classification of product innovation has been by and large based along one or both of two dimensions − technology and markets. Abernathy and Clark (1985) for instance categorized four different types of innovation spaces, determined by a market dimension and technological dimension.

The market dimension (creating new and/or breaks down existing market linkages vis a vis reinforcing existing market linkages) is mapped against the technological dimension (innovation that makes existing competence obsolete within the technology and production and at the other extreme innovation that reinforces existing competence within technology

and production). This gives rise to four different innovation spaces as depicted in Fig.2.3 below. This innovation typology described by the *transilience map* of Abernathy and Clark, was used to describe a product's life cycle.

Further work by Clark, this time with Henderson (1990) described another innovation space, where the horizontal axis described the innovation's effect on the existing product's components while the vertical axis symbolizes the innovation's effect on the linkages between the components. This typology described four different product innovations: architectural innovation, incremental innovation, modular innovation and radical innovation.

Thus this typology was based on the fact that a product is a sum of its components, the impact of innovation on the links between the components and on the components described the type of innovation.

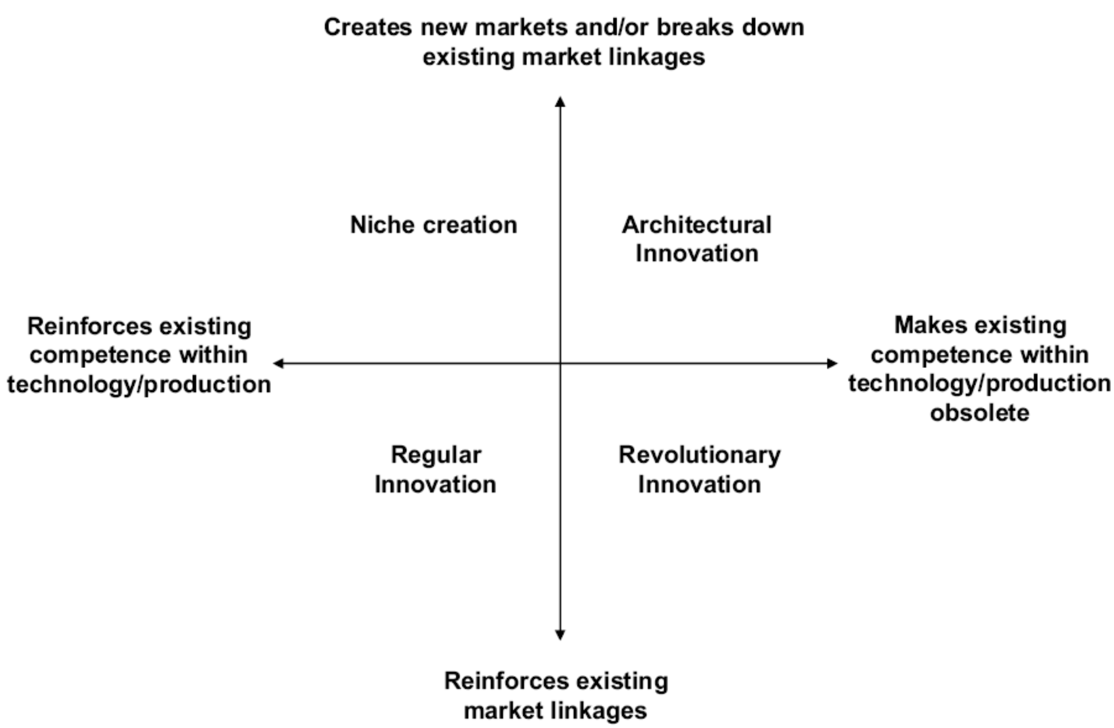


Fig. 2.3. Transilience map of Abernathy and Clark (1993)

The creator-user perspective of innovation was proposed by Afuah and Bahram (1995) who argued that it was necessary to view innovation from different perspectives, with regards to

different actors. Thus an actor dimension was added which permitted innovation to be also seen in the context of the degree of ‘novelty’ from the actor perspective.

2.2.4 So What’s New?

Innovation is of course more than creating completely new products or services. In a classic study of innovation published in 1982 (Booz Allen & Hamilton New Product Management in the 1980s) a survey was undertaken of products considered ‘new’ between the period 1976 and 1981. Overall 13000 of these ‘new’ products introduced by 700 firms were surveyed. The study found that there were actually six types of newness, as shown in Table 2.3 below.

Table 2.3. Six types of newness

Type	%
New to the world	10
New to the company	20
Line extensions	26
Improvements or revisions	26
Product repositioning	7
Cost reductions	11

Source: Booz Allen and Hamilton (1982)

Thus 90% of products which were considered new and innovative products were really incremental improvements or efficiency gains. Productscan Online; a consumer products market intelligence firm that studies new product statistics and trend tracking, defines innovation as

“Offering the consumer a significant new or added benefit not offered before.”

For a packaged product to be deemed innovative, Productscan Online's Innovation Ratings considers that a product must satisfy at least one of the following six criteria:

• Positioning a product to new users or usage
• Providing a consumer benefit with new packaging
• Offering additional value through a new formulation
• Introducing new technology to the product
• Opening up a new market for the product
• New merchandising methods to sell the product

Hence there are several types of "new" products. Some are new to the firm but not to the market, while others are new to the market and not to the firm and some are new to both.

Some involve minor modifications of existing products while some are radical innovations. Fig 2.4 summarizes the "newness" of a product along the two dimensions: new to the firm and new to the market.

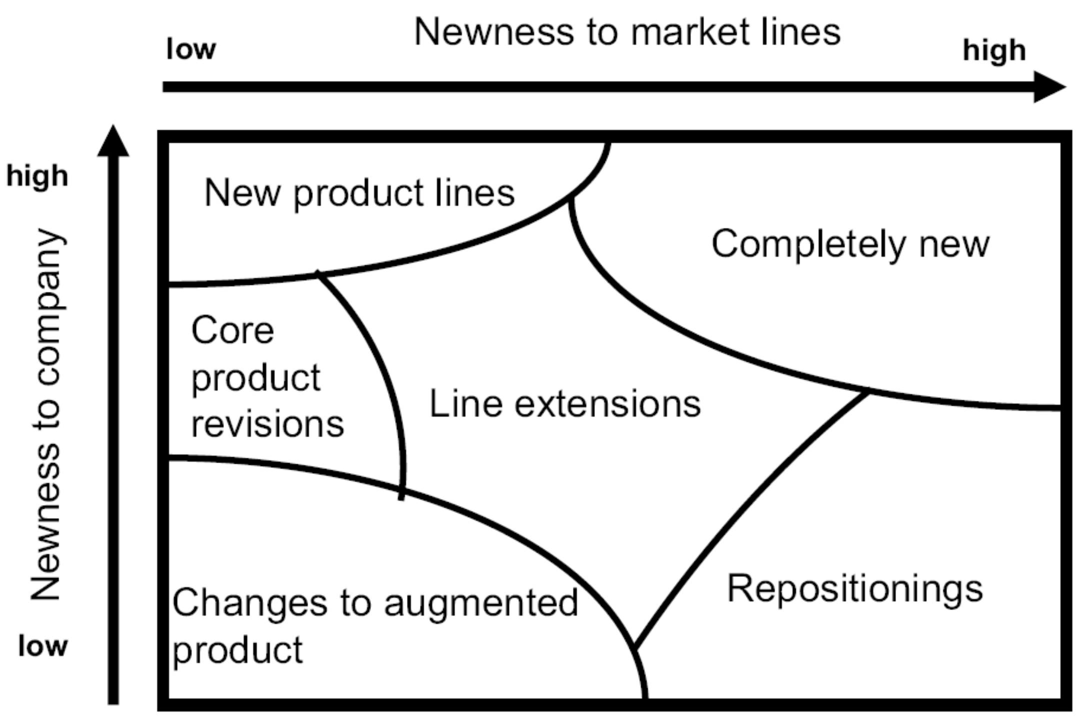


Fig. 2.4. New product types

(Innovation) is an S-shaped logistic curve consisting of three distinct phases; emergence (the development of the product or service, its manufacturing capabilities, and its place in the market). Growth (where the product family pervades the market), and maturity, where the market, is saturated, and growth slows (Sennett et al, 2000). Quinn (1986) believed that continuous innovation occurs largely because a few key executives have a broad vision of what their organizations can accomplish for the world, and lead their enterprises toward it. They appreciate the role of innovation in achieving their goals, and consciously manage their concerns value systems, and atmospheres to support it.

Innovation theory is well documented by Rogers (1995). The theory and extensive literature address the dynamics of the process whereby societies and organizations incorporate new technologies. According to the theory, a population can be segmented into five sup-populations that exhibit different adaptation patterns. Rogers estimates that about 2.5% of the population falls into the category of 'innovators' these individuals ignore the common practice, and demonstrate that contagion models, normally used for the spread of disease.

As Woodman and Dewett (2004) pointed out that "it is not really possible to change organizations in any truly meaningful sense unless organizational participants perform their jobs differently, change their thinking or attitudes in ways that support the needed changes". A culture supportive of innovation "engages behaviours that would value creativity, risk taking, freedom, teamwork, be value seeking and solutions oriented, communicative, instill trust and respect, and be quick on the uptake in making decisions. One would expect these behaviors to be desirable and normal, and ones that should be embedded in the corporate fabric" (Lock and Kirkopatric, 1995).

Their implication is that the innovative communicators 'infect' their peers with information about an innovation, which enables the next wave of 'early adopters', who constitute about

13% of the population. Attewell (1992) In the case of computer technology identifies informal computer experts, who become the ‘gurus,’ distributed throughout the organization. He observes that co-workers use these ‘latent experts’ for solving problems (Pope and Keck, 1999).

It is important in providing and sustaining firms' competitive advantage and is critical to achieving a superior performance. Firms with a greater degree of innovation capability are likely to achieve a higher competitive advantage. Innovation capability is also defined as the capacity to develop new products that satisfy market needs; applying appropriate process technologies to produce these new products; developing and adopting new product and processing technologies to satisfy future needs; and responding to accidental technology activities and unexpected opportunities created by competitors (Adler and Shenbar, 1990).

For consumers, innovation means higher quality and better value goods, more efficient services (both private and public) and higher standards of living.

For businesses, innovation means sustained or improved growth. The innovative company or organization delivers higher profits for its owners and investors. For employees, innovation means new and more interesting work, better skills and higher wages. Equally, an absence of innovation can lead to business stagnation and a loss of jobs.

For the economy as a whole innovation is the key to higher productivity and greater prosperity for all.

2.3 Literature Review:

The concepts of change, creativity and innovation "have never been more topical, especially given the commercial context of fierce business competition, shorter product life cycles and more demanding customers. Increasingly, long-term commercial success is based on an ability to manage change, to nurture creativity and to promote innovation" (Andriopoulos and Dawson, 2009).

Innovation has long been considered an important factor for creating and maintaining the competitiveness of nations and firms. Common knowledge stands that innovation is the cause of the increase of exports. However, contradicting empirical evidences are reported in the literature on the causality between innovation and export performance.

The relationship between innovation and export performance is often regarded to be of paramount importance to an economy and has long been investigated by many researchers around the world (e.g. Narula and Wakelin, 1998; Greenhalgh, 1990; Verspagen and Wakelin, 1997; Montobbio and Rampa, 2005 and DiPietro and Anoruo, 2006). However, in Jordan, virtually, there is no research on the relation between innovation and export in general and for Chemical and Pharmaceutical industries in particular. So it's important to investigate how innovation can affect the export performance and what are the most important factors of innovation has the most significant effect?

Previous studies can be divided into 3 categories: studies on innovation, studies on export performance and internationalization and finally studies on the innovation and the export performance relationship.

2.3.1 Focus on the innovation of the firms.

Innovation issues have been addressed through case studies and econometric studies.

The change and innovation research has been carried out by psychologists (King and Anderson, 2002), management scientists and organisational sociologists (Graetz et al. 2006), (Henry and Mayle, 2002), (Paton and McCalman, 2001), (Senior 2002), (Weick and Quinn, 1999), organization behaviour specialists (Mowday and Sutton, 1993) in addition to scholars from other disciplines (Clarke 1994).

Innovation is not simply developing new ideas, but rather is “the generation, acceptance and implementation of new ideas, processes, products or services” (West and Altink, 1996). ‘Creativity’ is commonly used as a synonym of ‘innovation’. Although the two terms are greatly connected to each other, they refer to two different but related concepts. “At its simplest, creativity is the thinking process that drives employees to generate new and useful ideas. Without the development of new ideas, the ability to respond to dynamic market pressures, or to imagine alternative ways of doing things, organizations may lose their competitive position and become staid and unresponsive to the shifting demands of their customers”(Andriopoulos and Dawson, 2009).

Many studies have been carried out on innovation: In a study done by Haddad and Al-Ghadeer (2004) investigating the marketing innovation and creativity in pharmaceutical and medicinal industry with the objective to explore the importance of innovation in marketing pharmaceutical products they found a positive relationship with R & D , financing, marketing data base, management, and firm size. In another study investigating the same topic but in banks, Al-Sarhan (2005) found that there are strong and medium statistical relation between marketing innovation & creativity in banking services and product and between achieving competition mark/advantage, distribution, management acknowledgement for marketing innovation, clients' recognition/acknowledgement for marketing innovation, and the availability of marketing.

Geroski (1995) examined the effects of major innovations and patents on various measures of corporate performance, including accounting profitability, stock market rates of return and corporate growth. While Olsen *et al* (2006), in their paper “Innovation in Small and Medium-Sized Enterprises: A Study of Businesses in New South Wales, Australia”, they have accomplished 3 objectives: first to examine other firm characteristics, in addition to firm size, in the innovation process; second to formulate a more sophisticated model of the innovation process, which recognizes it as being more complex than the traditional linear process involving R&D investment; and third to examine the nature of this process in Australian Small and Medium Enterprises (SMEs), using a sample of firms in New South Wales.

Cao. *et al* (2006) tried to investigate Innovation in China's furniture industry, they have explored the industry's recent development and measured its innovativeness via a combination of qualitative and quantitative approaches. Correlations among four key variables of interest--innovation, competitiveness, company size, and export intensity--are assessed. Results suggest that Chinese furniture firms are pursuing innovation with three equal focuses on product, process, and business systems.

Studying innovation has received increased attention. A preview of the trend is obvious from Figure 2.5 below of searched articles for the word ‘Innovation’ in their title from (1970-2009) as per 23,000 social sciences articles. This increased interest in ‘Innovation’ is mainly triggered by the pressure to present new products for customers.

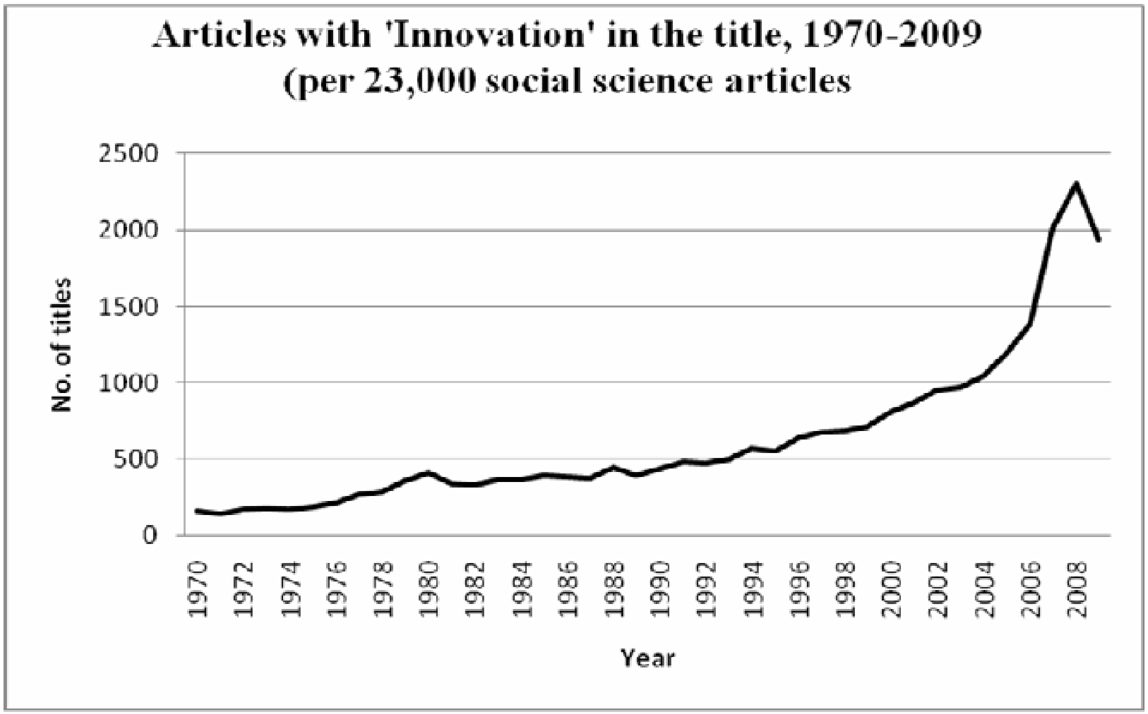


Figure 2.5

Source: ISI Web of Knowledge, Social science Citation Index, cited with permission in Feb 2010

2.3.2 Focus on the export performance and internationalization

A firm's internationalization is driven by the existence of hard to trade proprietary resources that the firm leverages and exploits in international markets (Markusen, 1995).

The literature on firm-level determinants of export performance and behaviour is extremely rich (Chetty and Hamilton, 1993) and covers a wide spectrum of issues, such as the relative importance of firms' demographics (Bonaccorsi, 1992; Wagner, 1995) or the relative impact of the beliefs, attitudes and perceptions of top management (Bijmolt and Zmart, 1994).

Although the traditional assumption that in order "to compete globally you have to be big" (Chandler, 1990) holds in several studies, a significant number of researchers have found

no relationship, or a negative relationship, between size and exports (Calof, 1993). Evidence from Australia, Denmark, Italy, Japan and Spain supports this observation that size is of considerable importance during the first stages of internationalization but does not seem to be a significant factor afterwards (OECD, 1997).

The relationship between age and exports may also produce conflicting results. On one hand, more mature firms may have accumulated considerable knowledge stocks (Baldwin and Rafiquzzaman, 1998) and built strong core capabilities that allow them to better penetrate foreign markets. On the other hand, core capabilities can become core rigidities or competence traps (Leonard-Barton, 1992) and younger firms may be more proactive, flexible and aggressive.

Technological capabilities refer to “the firm’s current ability and its future potential to apply firm-specific technology to solve technical problems and/or enhance the technical functioning of its production process and/or its finished products” (Nicholls-Nixon, 1995, p. 7). While Khon (1997) strongly suggests that small exporters are able to compete on foreign markets because of their technological capabilities, Sriram et al. (1989) observed a negative relationship between technology and exports, and Reid (1986) found no relationship.

Carlos (2004) in his “Export Performance Measurement: An Evaluation of the Empirical Research in the Literature” have revealed that export performance assessment is often idiosyncratic to the type of firm and its setting. This suggests the need for the adoption of a contingency approach in the selection of individual export performance measures to address the idiosyncrasies of the situation at hand, instead of taking a dogmatic view. While Myers (1999) has suggested using a measure like ROI to assess export performance ignoring the difference between firm's overall performance and the firm export performance.

Exports are measured as ratio of exports to total sales (Gruber et al., 1967), as excess of exports over imports to total sales (Gruber et al., 1967), as ratio of exports to imports (Soete, 1981) or as share of exports in total exports (Soete, 1981).

2.3.3 Focus on the innovation and the export performance:

In recent years the effects of innovation on economic growth and trade have been the subject of theoretical and empirical studies. The effects of innovation have been analyzed by two perspectives:

1. Innovation as a key element for economic development.

2. Innovation as an essential element to improve competitiveness in increasingly global markets.

These global markets began to impose, as a prerequisite, a systematic, permanent and a sustained innovation (Huergo, 2006).

Innovation thus has a central role in the process of long-term economic growth. We can consider two types of innovation: product innovation or process innovation. The first is defined by the development or introduction of a new product and / or service successfully in the market, the second refers to the process and organizational innovations that lead to increased productivity and to revitalize their own organizational structure and secure a position in the market. According to Cassiman and Martinez-Ros (2007) results, product innovation rather than process innovation affects the productivity of the company, considering an innate ability of the companies. Therefore, studies have focused on decisions that affect individual productivity and the dynamics of corporate survival. In the theory of product life cycle as originally presented by Raymond Vernon (1966) countries export innovative products, which are later imitated by developing countries.

In this context, the time factor is a key element between the adoption of new ideas and market responsiveness (Tidd et al 1997).

Export decisions have also been related businesses to better performance or productivity. Exporting companies have a higher productivity compared to other companies. Bernard and Jensen (1999) find that firms with larger export activities have higher levels of productivity, with high technology usage and pay higher salaries. According to the study by Chadha (2009) the ability to generate an export company is often seen as a key indicator of competitiveness and ability to generate wealth. According to him, innovation is positively related to export.

According to Lachenmaier and Woessman (2004) innovation is essentially an endogenous process (does not depend on causes external to the company itself, but rather a process is created within the company itself), but in the process of economic growth there is a relationship between innovation and export. The authors tested this hypothesis using data at the firm level in Germany. The results confirmed the hypothesis, it is more evident in technology-intensive sectors.

In the theoretical literature on the relationship between innovation and exports, we can find two main models. On one hand, there are models of international trade (for example; model of product life cycle) who tend to view innovation as endogenous (Lachenmaier and Woessman, 2004; Roper and Love, 2002), with a positive relationship between innovation and export activities. On the other hand, there are models that consider innovation an exogenous (Olszewki, 2008).

In an era of technological change, the return of the innovations is increasingly rapid. Companies must accelerate the process of internationalization by exports, in order to remain competitive not only with domestic competitors but also with foreign competitors. Without continuous innovation, innovative activity is quickly imitated in other parts of the

world. In addition, this year's innovations can replace last year innovations. Özçelik and Taymaz (2004) concluded that innovation is an important factor to explain not only the performance of exports, but also to firm size, measured by the number of employees. This is the Schumpeterian hypothesis of positive relationship between company size and innovation.

In a literature on endogenous economic growth (Romer, 1986, and especially Grossman and Helpman, 1991) it is argued the causality may run from trade to technical change, i.e. from export to innovation activities, as well as vice versa.

Wakelin (1998) states that, in addition to relative prices, differences in terms of innovation can significantly influence the performance of export activities. According to economic theory it is expected that the propensity to be innovative is increasing function of firm size, human capital, investment and exports.

However, companies that are highly dependent on bank loans are less likely to be involved in innovation activities in relation to companies which finance their R & D through self-financing (Wakelin, 1998).

Chada (2009) indicates that technology, R & D activities, intellectual skills and creativity are key factors in explaining international trade flows. Also Loof (2009) considers that investment in R & D has direct effect in winning market share (just in exports) and indirect effects on the improvement of innovation, know-how management, productivity, and competitiveness.

Various measures for firm innovation activities have been used. Earlier studies use quite narrow input measures of innovation processes like R&D expenditures in relation to total

sales or ratio of R&D employees to total employment (Gruber et al., 1967; and Wolter, 1977). Since export performance is more likely to be affected by the output of innovation processes, attempts have been made to find appropriate output measures. Soete (1981, 1987) uses the share of patent applications in total patents. Most of these studies find a positive correlation between the chosen measure of innovation and export activities.

Damijan and Kostevc (2006) in a study of companies in Slovenia in the period between 1994 and 2002 assess the heterogeneity of firms, foreign trade and firm performance. They also consider the effects of learning (learning by doing) in exports. The capital structure is an important strategic decision for most companies and plays an important role in the export strategy of multinational firms (Aggarwal *et al*., 2008).

In a research paper "Innovation and Internationalization. A focus on the Spanish exporting firm." Diana-Andreea Filipescu (2007) try to analyze the existence of a relationship between the innovation and the internationalization processes of the firm, since it is assumed that there is a cyclic one, having as a theoretical background the internationalization theory of the firm, the resource-based view of the firm, and also the literature on the innovation phenomenon of the firm.

And here are further studies that relate innovation and export performance, Phapruke (2007) in his research "Innovation capability and export performance: an empirical study of textile businesses in Thailand" aims at empirically examining and investigating the relationships between innovation capability and export performance of textile businesses in Thailand. In this study, three dimensions of innovation capability (innovativeness, capacity to innovate, and willingness to change) were chosen as independent variables. The results demonstrate that innovativeness, capacity to innovate, and willingness to change have a significant positive impact and influence on exporting firms' performance. While Radu Chiru (2003) in his paper "Innovativeness and Export Orientation Among Establishments in Knowledge-Intensive Business Services (KIBS)" he tried to examine the link between

establishment innovativeness and export orientation among KIBS (knowledge-intensive business services) operating within Canada. Controlling for foreign or domestic control, size of establishment, training level of workforce, usage of intellectual property protection and industry type, it finds that innovation is positively linked to export orientation. It also finds that different factors are important for explaining export orientation for innovators than for non-innovators as well as for establishments of different sizes. And a third research Anh *etal*, (2007) in their paper “Innovation and Export of Vietnam’s SME Sector”, they tried to examine whether innovation performed by Vietnam’s small and medium enterprises (SMEs) enhances their exporting likelihood. Using the recently released Vietnam Small and Medium Enterprise Survey 2005,they found that innovation as measured directly by ‘new products’, ‘new production process’ and ‘improvement of existing products’ are important determinants of exports by Vietnamese SMEs.

Namiki (1989) in his article “The impact of competitive strategy on export sales performance: an exploratory study” he tried is to investigate the role of strategy a firm elects in its export sales performance. Competitive strategy, or business-level strategy, has emerged as an important topic in the strategic management field for one national (U.S.) market. The results clearly showed the significant impacts of competitive strategy on a firm's export activities and performance. Three strategies, i.e., prospectors, analyzers and defenders, outperformed reactors in terms of export performance. Defenders which compete mainly on the basis of low cost positions relative to competitors in a narrow range of products, tended to be less export oriented than did both prospectors and analyzers. The study also found that, while the firm's export marketing activities had significant effects on their export intensity measure of performance, the firms' adopted competitive strategies had more significant impacts on export growth. And the technological advantages of firms were often found to be a major determinant of export performance.

2.4 Theoretical framework:

According to the previously presented literature review, the researcher developed a comprehensive theoretical framework, presented below.

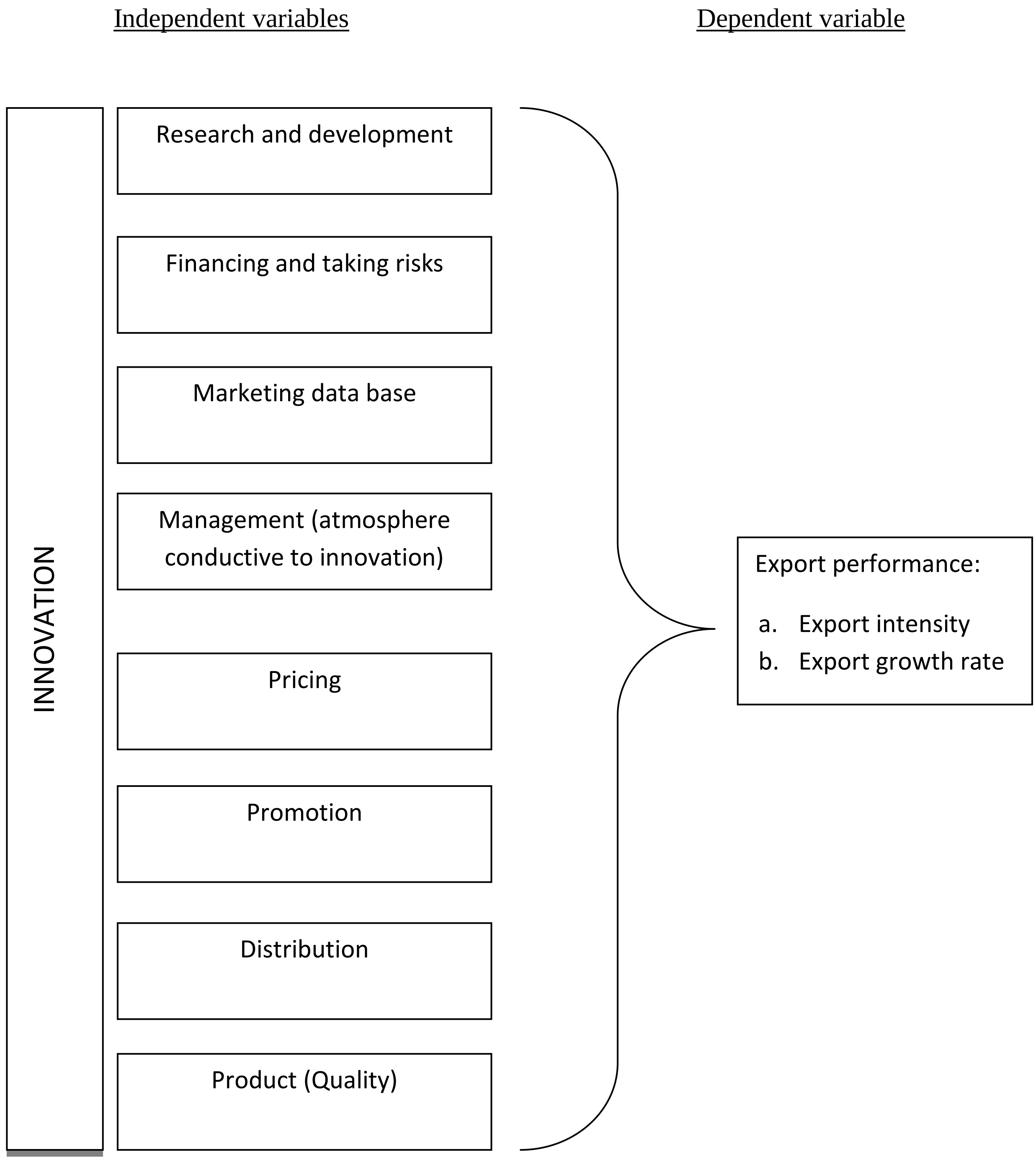
2.4.1 Research Model:

Figure 2.6, presents the research model developed for the purposes of this research, it consists of two main variables, a dependent variable and independent variables.

The dependent variable is the export performance (which is measured by: export intensity and export growth rate), which is affected by the independent variables; the antecedents or the factors affecting company's export performance. These factors were derived from previous research, where all were independently found to be related to increased levels of export performance. However, they had not been combined and tested in the same study.

The research proposes eight independent variables; Research and Development, Financing and taking risks, Marketing data base, Management (atmosphere conductive to innovation), Pricing, Promotion, Distribution and Product (Quality).

Fig. 2.6: Research model:



Source: by the researcher himself according to previous studies

2.4.2 Operational Definition of Research Variables:

Innovation: the successful introduction of a new thing or method.

Research and development (R&D): Investigative activities that a business chooses to conduct with the intention of making a discovery that can either lead to the development of new products or procedures, or to improvement of existing products or procedures.

Financing and taking risks: the ability of the firm to finance certain scientific research and taking risks in the development of its products.

Marketing data base: a structured collection of records or data that is stored in a computer system on a hard drive or in certain files and documents so that a person can consult it to answer queries and retrieve data records.

Management: the extents to which the firm creates an “atmosphere” conducive to innovative activity.

Pricing: The amount of money given or set as consideration for the sale of a specific product.

Promotion: This includes all of the tools available to the marketer for 'marketing communication'.

Distribution: It is an organization or set of organizations (go-betweens) involved in the process of making a product available for use or consumption by a consumer or business user.

Quality of the product: It is assured by comprehensive development program, extensive manufacturing and environmental controls, and rigorous validation procedures and requirements.

Export intensity: the proportion of total company revenues derived from export activity.

Export growth rate: the degree of growth in export over the last three years.

Table no. 2.4 How to Measure the Variables

Variable	**How to Measure the Variable**	**Reference**
Export Performance	Export Growth Rate	Gruber et al (1967)
	Export Intensity	Cao et al (2006), Myers (1999), Gruber et al (1967)
Innovation	Research and Development (R&D)	Haddad and Al-Ghadeer (2004), Olsen et al (2006), Chada (2009)
	Financing and Taking Risks	Haddad and Al-Ghadeer (2004), Wakelin (1998), Loof (2009)
	Marketing Data Base	Haddad and Al-Ghadeer (2004), Al-Sarhan (2005)
	Management (Atmosphere Conductive to Innovation)	Haddad and Al-Ghadeer (2004), Al-Sarhan (2005), Bijmolt and Zmart (1994),
	Pricing	Wakelin (1998), Oslo Manual of the OECD (2005)
	Promotion	Oslo Manual of the OECD (2005)
	Distribution	Al-Sarhan (2005), Oslo Manual of the OECD (2005)
	Product (Quality)	Cassiman and Martinez-Ros (2007), Schumpeter (1939)

Source: the researcher himself

2.4.3 Research Hypotheses:

Main Hypothesis:

Null hypothesis (Ho): There is no statistical significant relationship between innovation and the export performance.

Sub-Hypotheses:

Null hypothesis no. 1 (Ho1): There is no statistical significant relationship between the research and development and the export performance.

Null hypothesis no. 2 (Ho2): There is no statistical significant relationship between the financing and taking risks and the export performance.

Null hypothesis no. 3 (Ho3): There is no statistical significant relationship between the marketing data base and the export performance.

Null hypothesis no. 4 (Ho4): There is no statistical significant relationship between the management and the export performance.

Null hypothesis no. 5 (Ho5): There is no statistical significant relationship between the pricing and the export performance.

Null hypothesis no. 6 (Ho6): There is no statistical significant relationship between the promotion and the export performance.

Null hypothesis no. 7 (Ho7): There is no statistical significant relationship between the distribution and the export performance.

Null hypothesis no. 8 (Ho8): There is no statistical significant relationship between the quality of the product and the export performance.

Chapter Three:

1. Research methodology
2. Analysis of the results

3.1 Research methodology:

This section demonstrates the research design and clarifies data collection and analysis methods.

3.1.1 Research Type:

This research uses two research scientific approaches, the descriptive analysis is undertaken to describe the characteristics of the variables, and also to get a general idea on innovation and export performance.

Empirical investigation is used to test the research hypotheses, and to explain the nature of variables relationships.

3.1.2 Population and Sampling Design:

The study population consists of all pharmaceutical and chemical industry companies which perform export activities. So the population size consists of 34 companies (9 pharmaceutical companies and 25 chemical companies, see table no. 3.1), also it has been considered a sample size as well, in order to offer the highest level of comprehensiveness.

Table no. 3.1: Study population by sector

Sector	No. of companies	Percentage of total companies
Pharmaceutical companies	9	26%
Chemical companies	25	74%
Total	34	100%

Source: Jordan Chamber of Commerce and Industry, 2011

3.1.3 Data Collection Methods:

Two data collection methods are used to support this thesis.

Secondary data are obtained from various books, periodicals, theses, and the internet.

Primary data needed for this study are gathered by a structured questionnaire measuring the proposed variables developed by the researcher himself, generated through the examination of available literature. The questionnaire consists of three parts; the first part relates to questions concerning the employee who answered the questionnaire, the second part of the questionnaire relates to questions concerning companies' characteristics (export activities, R&D, Company's background) along with the question measuring the export intensity and export growth rate. And the third part of the questionnaire relates to questions measuring each of the proposed antecedents on a five point Likert scale.

After the questionnaire was developed, it was assessed and evaluated prior distribution to respondents, by a number of key specialists and professionals in business research and marketing from the University of Jordan. Next, the questionnaire was pre-tested on a randomly selected panel of seven companies from which the sample would be drawn, in order to obtain an understanding of how respondents viewed and interpreted the questionnaire statements. After the interviews were conducted, the questionnaire was modified and adjusted to reflect needed simplification and instruction clarity. Afterward the questionnaires were administered to the remaining population by personal visits to the companies or sent by Email; where geographic distance made it impossible to deliver the questionnaires personally. Marketing managers were asked to complete the questionnaire. In companies where no marketing manager existed, the questionnaire was asked to be completed by the General Manager, or Production Manager. All selected respondents were key informants who had access to privileged information about their company's activities. A copy of the questionnaire is attached in the appendix.

Afterwards, the researcher followed up the questionnaire completion through phone calls and sites visits. After a one month period, twenty two questionnaires were collected, presenting a sixty five-percent response rate.

3.1.4 Data Analysis Methods:

After data were collected, completed questionnaires were checked, edited and coded before the data were keyed in. The Statistical Package for Social Science (SPSS) software was utilized for statistical analysis. Different methods of analysis were employed; descriptive analysis was used to calculate frequencies, Cronbach's alpha coefficient to test the reliability of the data measured, multiple regression test was used to test the main research hypotheses in addition to step wise regression analysis and Pearson Correlation tests were used to test the sub-hypotheses. Tables were generated to develop a better understanding of the findings.

3.1.5 Validity and Reliability:

The questionnaires were assessed and evaluated prior distribution to respondents by a number of key specialists and professionals in this business research field from the University of Jordan.

However, the reliability of the study constructs was assessed by examining the Cronbach's alpha coefficient. Cronbach's alpha was calculated and it was found to be (0. 81) more than 0.6 (Sekaran, 1992). Thus, it indicates the stability and consistency of the scale.

3.2 Data analysis:

3.2.1 Descriptive Analysis:

This section presents and discusses the descriptive analysis for the collected data. Table no. 3.2 below, demonstrates the actual and the respondent number of companies for each sector.

Table no. 3.2: Number of Actual and Respondent Companies by Sector

Sector	Actual Number of Companies	Respondent Number of Companies	Percentage of Questionnaires Returned Within Each Sector
Pharmaceutical companies	9	7	78%
Chemical companies	25	15	60%
Total	34	22	65%

From the table above, it can be noticed, that twenty two companies responded to the questionnaire. The response rate is thereof sixty five percent. Also It can be noticed that the largest percentage of respondent companies are within the Pharmaceutical sector (78%), followed by chemical companies sector (60%).

Table 3.3 below, demonstrates the export intensity (the proportion of total company revenues derived from export activity) for the companies participating in the study.

Table 3.3: Export intensity

Export intensity	**Frequency**	**Percentage**
Less than 5%	6	27.2%
5% - 10%	10	45.5%
11% - 50 %	4	18.2%
More than 50%	2	9.1%
Total	22	100%

From the above table, 5% to 10% export intensity constitutes the highest percentage of 45.5% of the total sample (ten companies), followed by “Less than 5%” with six companies (27.2%), four companies (18.2%) have export intensity of “11% - 50%” and “More than 50%” constitutes 9.1% (two companies).

Table 3.4 below, demonstrates the export growth rate (the degree of growth in export over the last three years) for the companies participating in the study.

Table 3.4: Export growth rate

Export growth rate	**Frequency**	**Percentage**
Less than 1%	5	22.7%
1% - 5%	12	54.5%
5% - 10 %	1	4.5%
More than 10%	4	18.3%
Total	22	100.0%

From the table above, it can be noticed that more than half of responding companies (54.5%) have export growth rate between 1% and 5%, five companies (22.7%) have less than 1%, four companies (18.3%) have more than10% growth rate, and only one (4.5%) companies have between from 5% to 10% growth rate.

Table 3.5 below, demonstrates the number of R&D staff to the total no. of company's staff for the companies participating in the study.

Table 3.5: R&D staff to the total number of company's staff

R&D staff to the total no. of company's staff	**Frequency**	**Percentage**
Less than 0.5%	3	13.6%
0.5% - 1%	2	9.2%
1% - 5%	14	63.6%
More than 5%	3	13.6%
Total	22	100.0%

From the table above, it can be noticed that more than half of responding companies (63.6%) have R&D staff to the total number of company's staff between 1% and 5%, three companies (13.6%) have less than 0.5%, and three companies (13.6%) have more than 5%

growth rate, and only two (9.2%) companies have between 0.5% to 1% R&D staff to the total number of company's staff.

Table 3.6 below, demonstrates the percentage of expenditure allocated to R&D for the companies participating in the study.

Table 3.6: Percentage of expenditure allocated to R&D

Percentage of expenditure allocated to R&D	**Frequency**	**Percentage**
Less than 1%	5	22.7%
1% - 5%	17	77.3%
6% - 10 %	0	0%
More than 10%	0	0%
Total	22	100.0%

From the table above, it can be noticed that most of companies (77.3%) have percentage of expenditure allocated to R&D between 1% and 5%, with five companies (22.7%) have less than 1%, with no companies have percentage of expenditure allocated to R&D more than 6%.

Table 3.7 below, demonstrates number of years working in the business for the companies participating in the study.

Table 3.7: Number of years working in the business

No. of years working in the business	**Frequency**	**Percentage**
Less than 1 year	0	0.0%
1 – 5 years	2	9.1%
6 - 10 years	13	59.1%
More than 10 years	7	31.8%
Total	22	100.0%

From the table above, it can be noticed that most of companies (59.1%) have number of years working in the business between 6 and 10 years, with seven companies (31.8%) have more than 10 years in the business, two companies have number of years working in the business between 1 and 5 years with no companies have number of years working in the business less than 1 year.

Table 3.8 below, demonstrates number of years with export activity for the companies participating in the study.

Table 3.8: Number of years with export activity

No. of years with export activity	**Frequency**	**Percentage**
Less than 1 year	0	0.0%
1 – 5 years	6	27.3%
6 - 10 years	12	54.5%
More than 10 years	4	18.2%
Total	22	100.0%

From the table above, it can be noticed that most of companies (54.5%) have number of years with export activity between 6 and 10 years, with six companies (27.3%) have number of years with export activity between 1 and 5 years, Four companies have more than 10 years with export activity, with no companies have number of years with export activity less than 1 year.

Table 3.9 below, demonstrates total number of employees for the companies participating in the study.

Table 3.9: Total number of employees

Total no. of employees	**Frequency**	**Percentage**
Less than 100	3	13.6%
100 – 500	11	50.0%
501 - 1000	6	27.3%
More than 1000	2	9.1%
Total	22	100.0%

From the table above, it can be noticed that half of companies (50%) have total number of employees between 100 and 500, with six companies (27.3%) have total number of employees between 501 and 1000, Three companies (13.6%) have less than 100 employees, and two companies (9.1%) have more than 1000 total number of employees.

Table 3.10 below, demonstrates type of the company for the companies participating in the study.

Table 3.10: Type of the company

Total no. of employees	**Frequency**	**Percentage**
Public Limited Liability Company or PLC	10	45.5%
Limited Liability Company or LLC	7	31.8%
Limited partnership	0	0.0%
Sole trader	3	13.6%
Co-operative	0	0.0%
Limited Liability Partnership	2	9.1%
General partnership	0	0.0%
Total	22	100%

From the table above, it can be noticed that the majority of companies (45.5%) are Public limited liability or PLC, seven companies (31.8%) Limited liability or LLC, Three companies (13.6%) are sole traders, two companies (9.1%) are Limited liability partnership, with no companies: Limited partnership, Co-operative or General partnership.

Table 3.11 below, demonstrates the descriptive analysis for the collected data measuring Research and Development.

Table no. 3.11: Descriptive analysis for the collected data measuring Research and Development

Question No.	Question	Minimum	Maximum	Mean	Std. Deviation
1	The company works continuously to launch new products	4.00	5.00	4.6364	.49237
4	The company has a specialized R&D department	3.00	5.00	4.5455	.59580
2	The company works on improving its existing products	3.00	5.00	4.3636	.65795
3	The company adopts new scientific progress in its field	1.00	5.00	3.1818	1.05272
5	The company collaborate with scientific research institutes and universities to develop new ideas	1.00	4.00	2.7273	1.07711
Research and Development		**2.40**	**4.60**	**3.8909**	**.66110**

The above table shows that there is a negative attitude from the respondents toward question no. 5, since its mean is less than the mean of the scale* which is 3. While there are positive attitudes towards the rest of the questions because their means are greater than the mean of the scale. (*Mean of the scale = Σ *Degrees of the scale* / 5 = 1+2+3+4+5 / 5 = 3).

Table 3.12 below, demonstrates the descriptive analysis for the collected data measuring Financing and taking risks.

Table no. 3.12: Descriptive analysis for the collected data measuring Financing and taking risks

Question No.	Question	Minimum	Maximum	Mean	Std. Deviation
1	The company has a specialized team looking for new opportunities	3.00	5.00	4.3182	.71623
3	Flexibility of budgeting for R&D department	3.00	5.00	4.0909	.61016
4	The company invests in certain markets or fields where competitors failed	1.00	4.00	2.3636	1.00216
2	The company funds scientific research which is relevant to its field	1.00	3.00	2.2727	.82703
Financing and taking risks		**2.25**	**4.25**	**3.2614**	**.64308**

The above table shows that there are negative attitudes from the respondents toward questions no. 4 and 2, since their means are less than the mean of the scale which is 3. While there are positive attitudes towards the rest of the questions because their means are greater than the mean of the scale.

Table 3.13 below, demonstrates the descriptive analysis for the collected data measuring the product (quality).

Table no. 3.13: Descriptive analysis for the collected data measuring the product (quality)

Question No.	**Question**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
1	The company develops and modifies its products according to its customers needs	4.00	5.00	4.8182	.39477
2	The company provides different products for different market segments	3.00	5.00	4.6818	.64633
4	The company complies with international quality certification (ISO, FDA, MHRA, …etc)	2.00	5.00	4.4091	.85407
3	There is correlation between the price and the quality of the company's products	3.00	5.00	4.3182	.77989
5	The company has innovative products	1.00	5.00	2.9545	1.09010
Product (Quality)		**2.80**	**5.00**	**4.2364**	**.60043**

The above table 3.13 shows that there is a negative attitude from the respondents toward question no. 5, since its mean is less than the mean of the scale which is 3. While there are positive attitudes towards the rest of the questions because their means are greater than the mean of the scale.

Table 3.14 below, demonstrates the descriptive analysis for the collected data measuring the Management (Atmosphere conductive to innovation).

Table no. 3.14: Descriptive analysis for the collected data measuring the Management (Atmosphere conductive to innovation)

Question No.	**Question**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
3	The company considers creativity and innovation as essential factors in appraisal for staff performance	3.00	5.00	4.5000	.74001
2	The company grants incentives for employees with innovative ideas	3.00	5.00	4.0000	.61721
7	There is a specific department that influences the investment decision of the company	3.00	5.00	3.8636	.46756
6	The extent of cooperation within the team and between different teams	2.00	5.00	3.4091	.66613
1	The company holds training sessions for the staff encourage the innovative thinking	2.00	4.00	3.4091	.59033
5	The company provides a sort of decentralization which helps the generation of new ideas	3.00	4.00	3.3636	.49237
4	Hierarchy of the company helps in the creativity and innovation of employees	2.00	4.00	3.3182	.56790
8	The company relies on internal marketing to promote its new ideas and products	2.00	4.00	2.8636	.45673
Management (Atmosphere conductive to innovation)		**2.75**	**4.50**	**3.5909**	**.45673**

The above table 3.14 shows that there is a negative attitude from the respondents toward question no. 8, since its mean is less than the mean of the scale which is 3. While there are positive attitudes towards the rest of the questions because their means are greater than the mean of the scale.

Table 3.15 below, demonstrates the descriptive analysis for the collected data measuring the Marketing data base.

Table no. 3.15: Descriptive analysis for the collected data measuring the Marketing data base

Question No.	**Question**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
1	The company follows local competitor's activities	4.00	5.00	4.7273	.45584
2	The company follows international competitor's activities	4.00	5.00	4.6818	.47673
8	The company uses the collected and analyzed data efficiently in the market	3.00	5.00	3.7727	.61193
9	The company utilizes new tools for obtaining marketing data base (e.g: customer relationship management "CRM")	2.00	4.00	3.5000	.59761
4	The company has updated technology infrastructure	2.00	4.00	3.5000	.59761
7	The company has a specialized marketing intelligence team	2.00	4.00	3.3636	.58109
6	The company has a specialized market research team	2.00	4.00	3.3636	.58109
3	The company has integrated information system for new ideas and suggestions	2.00	5.00	3.3636	.72673
5	The company deals with neutral third party for market research purposes	1.00	5.00	3.3182	.89370
Marketing data base		**2.78**	**4.33**	**3.7323**	**.45575**

The above table shows that there is no negative attitude from the respondents toward any question, While all are positive attitudes towards the questions because their means are greater than the mean of the scale (3).

Table 3.16 below, demonstrates the descriptive analysis for the collected data measuring the pricing.

Table no. 3.16: Descriptive analysis for the collected data measuring the pricing

Question No.	**Question**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
2	The company takes competitors prices into consideration when pricing its new products	4.00	5.00	4.8182	.39477
1	The company uses different pricing strategies in different situations	4.00	5.00	4.7273	.45584
5	The company is able to deliver the maximum perceived value for its product with the minimum price relative to competitors	4.00	5.00	4.6818	.47673
4	The company uses cost minimization systems to have a competitive price in the market	3.00	5.00	3.9091	.61016
3	The price of the products is relevant to innovation vision of the company	1.00	5.00	3.1364	1.08213
Pricing		**3.40**	**4.80**	**4.2545**	**.44156**

The above table shows that there is no negative attitude from the respondents toward any question, While all are positive attitudes towards the questions because their means are greater than the mean of the scale (3).

Table 3.17 below, demonstrates the descriptive analysis for the collected data measuring the promotion.

Table no. 3.17: Descriptive analysis for the collected data measuring the promotion

Question No.	**Question**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
1	The company applies different promotional tools in promoting its products	3.00	5.00	4.6818	.56790
3	There is an alignment and integration between the different promotional tools used by the company	3.00	5.00	4.6364	.58109
2	Sales promotion, media, events and experience, PR, direct marketing	3.00	5.00	4.3636	.78954
5	The company links the promotional tools together to reflect a high quality product	3.00	5.00	4.2727	.70250
6	The company has a specialized team for designing and executing promotional tools	2.00	5.00	4.1818	.73266
4	The company applies new ideas of marketing communication for promotion	2.00	5.00	3.4545	.91168
Promotion		**2.67**	**5.00**	**4.2652**	**.61218**

The above table shows that there is no negative attitude from the respondents toward any question, While all are positive attitudes towards the questions because their means are greater than the mean of the scale (3).

Table 3.18 below, demonstrates the descriptive analysis for the collected data measuring Distribution.

Table no. 3.18: Descriptive analysis for the collected data measuring Distribution

Question No.	Question	Minimum	Maximum	Mean	Std. Deviation
1	The company faces regulatory restrictions in different markets	3.00	5.00	4.1818	.66450
3	The mother company grants facilities to distributing agents	3.00	5.00	3.8636	.63960
4	The company uses many distributors so that it can reach all customers segments	1.00	5.00	3.5909	.95912
2	The company uses other companies existing infrastructure to distribute its products	1.00	5.00	3.1818	1.09702
Distribution		**2.75**	**4.50**	**3.7045**	**.46698**

The above table 3.18 shows that there is no negative attitude from the respondents toward any question, While all are positive attitudes towards the questions because their means are greater than the mean of the scale (3).

Table no. 3.19: Descriptive analysis for innovation variables

Variable No.	**Variable**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
1	Promotion	2.67	5.00	4.2652	.61218
2	Pricing	3.40	4.80	4.2545	.44156
3	Product (Quality)	2.80	5.00	4.2364	.60043
4	Research and Development	2.40	4.60	3.8909	.66110
5	Marketing data base	2.78	4.33	3.7323	.45575
6	Distribution	2.75	4.50	3.7045	.46698
7	Management (Atmosphere conductive to innovation)	2.75	4.50	3.5909	.45673
8	Financing and taking risks	2.25	4.25	3.2614	.64308

The above table 3.19 shows that there is no negative attitude from the respondents toward any variable; all are positive attitudes towards the questions because their means are greater than the mean of the scale (3). Promotion got the highest mean while Financing and Taking Risks got the lowest.

3.2.2 Reliability Test:

Table no. 3.20: Cronbach's Alpha reliability test for the independent variables

Variable	Cronbach's Alpha	Number of items
R&D	.873	5
Financing and Taking risks	.815	4
Marketing data base	.889	9
Management (atmosphere conductive to innovation)	.902	8
Pricing	.703	5
Promotion	.920	6
Distribution	.197	4
Product (Quality)	.820	5
Innovation (in total)	.949	46

According to the above table, there is high internal consistency or reliability between the items measure a single independent variable, except for distribution (.197). While for innovation (in total) we have a very strong internal consistency between the eight independent variables (.949).

3.3 Hypotheses Testing:

This section tests and discusses the research hypotheses.

Main Hypothesis:

Null hypothesis (Ho): There is no statistical significant relationship between innovation and the export performance.

Because we want to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships, Regression analysis is used.

Table no. 3.21: Analysis for the main Hypothesis (using regression test)

F (calculated)	**F (tabulated)**	**R**	**R Square**	**Adjusted R Square**	**Beta**	**F Sig.**	**Hypothesis Testing Result**
3.483	2.49	.763	.582	.415	.565	.023	Rejected

To test this hypothesis using the multiple regression test, and according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant relationship between innovation and export performance (taken together).

The decision rule here is to accept the null hypothesis Ho if the calculated value is less than the tabulated value and to reject the null hypothesis Ho if the calculated value is greater than the tabulated value. Hence this hypothesis Ho is rejected.

R square value exhibits the capability of the independent variable in predicting the dependent variable; indicating that 58.2% of the variation in export performance is explained by the innovation factors within the organization. Beta Coefficient is .565 indicating a positive relationship between innovation and export performance.

Table 3.22 below exhibits the Stepwise Regression Analysis for the Variables

Table 3.22: Stepwise Regression Analysis for the Variables

Variable	R	R^2	F	Beta	Sig.
Research and Development	.721	.519	.741	.503	.000
Marketing data base	757	.573	.912	.559	.000
Product (Quality)	.790	.625	.972	.592	.000
Promotion	.824	.679	.317	.627	.000
Management (atmosphere conductive to innovation)	.843	.710	.098	.658	.000

From the table above, it can be noticed that according to Stepwise Regression Analysis, Management (atmosphere conductive to innovation) is the most significant factor within the variables, followed by Promotion and Product (Quality) respectively. After that, Marketing data base and Research and Development follow. Beta Coefficient is positive for the above five variables indicating a positive relationships between these variables and export performance.

Table no. 3.23: Analysis for the main Hypothesis (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.656*	.001

**Correlation is significant at the 0.01 level (2-tailed)*

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant positive relationship between innovation and export performance (taken together).

Figure 3.1 below, illustrates the research model adjusted according to independent variables' R square value. In addition, R square values are presented for the independent variables separately, and for all the independent variables taken together.

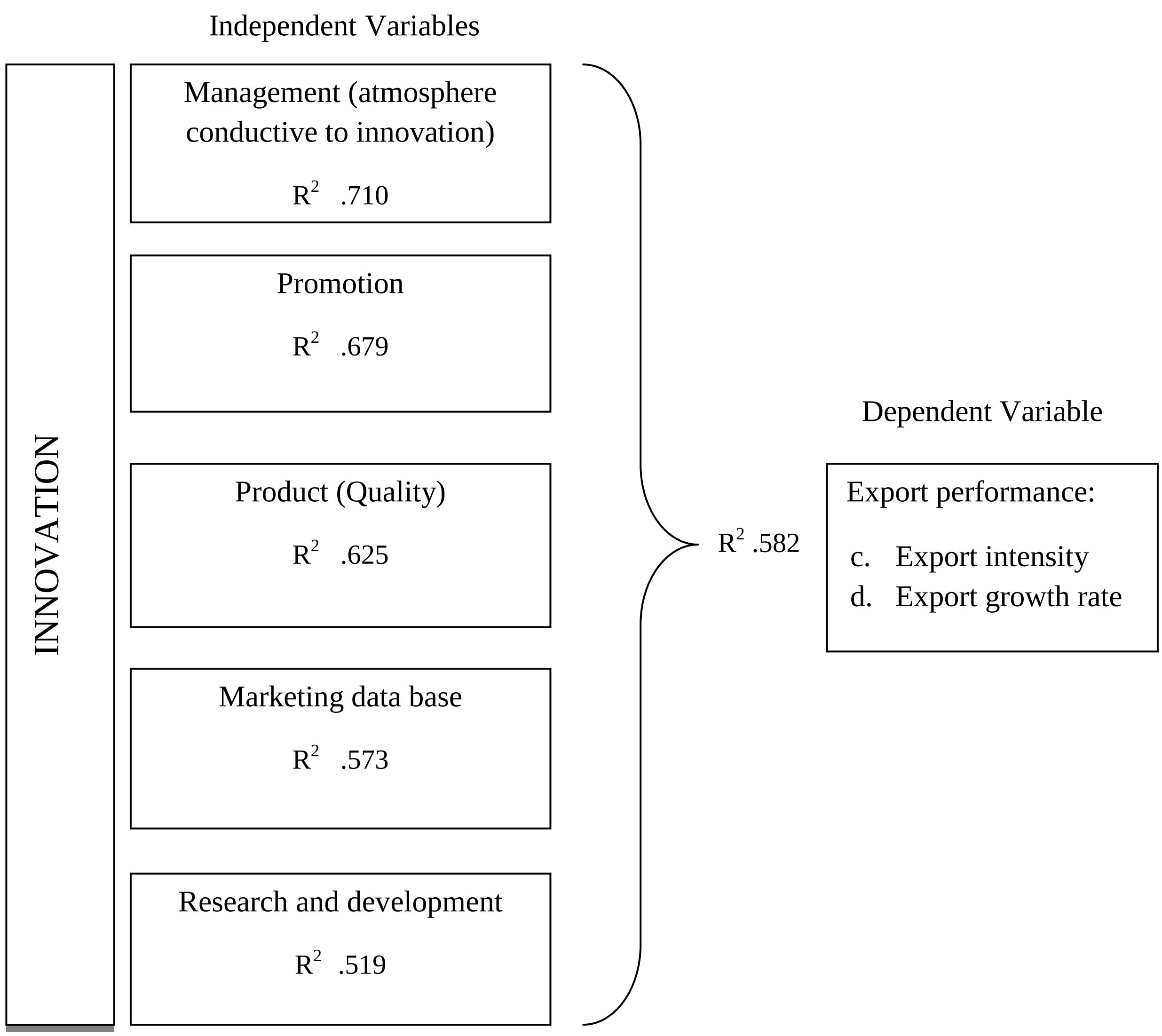


Fig 3.1: The research model adjusted according to independent variables' R square value (By the researcher according to step-wise regression)

Sub-Hypotheses:

Null hypothesis no. 1 (Ho1): There is no statistical significant relationship between the research and development and the export performance.

To investigate the relationship between two quantitative dependent and independent variables Pearson's correlation is used, which measures the strength of the association between the two variables.

Table no.3.24: Analysis for sub-Hypothesis 1 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.626*	.002

**Correlation is significant at the 0.01 level (2-tailed)*

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant positive relationship between Research and Development and export performance (taken together).

Null hypothesis no. 2 (Ho2): There is no statistical significant relationship between the financing and taking risks and the export performance.

Table no.3.25: Analysis for sub-Hypothesis 2 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.664*	.001

**Correlation is significant at the 0.01 level (2-tailed)*

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant positive relationship between Research and Development and export performance (taken together).

Null hypothesis no. 3 (Ho3): There is no statistical significant relationship between the marketing data base and the export performance.

Table no.3.26: Analysis for sub-Hypothesis 3 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.531**	.011

***Correlation is significant at the 0.05 level (2-tailed)*

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant positive relationship between marketing data base and export performance (taken together).

Null hypothesis no. 4 (Ho4): There is no statistical significant relationship between the management and the export performance.

Table no.3.27: Analysis for sub-Hypothesis 4 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.429**	.046

***Correlation is significant at the 0.05 level (2-tailed)*

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant positive relationship between management and export performance (taken together).

Null hypothesis no. 5 (Ho5): There is no statistical significant relationship between the pricing and the export performance.

Table no.3.28: Analysis for sub-Hypothesis 5 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.096	.670

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will accept the null hypothesis, meaning; there is no statistical significant relationship between pricing and export performance (taken together). (Since P value is more than .05).

Null hypothesis no. 6 (Ho6): There is no statistical significant relationship between the promotion and the export performance.

Table no.3.29: Analysis for sub-Hypothesis 6 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.331	.133

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will accept the null hypothesis, meaning; there is no statistical significant relationship between the promotion and export performance (taken together). (Since P value is more than .05).

Null hypothesis no. 7 (Ho7): There is no statistical significant relationship between the distribution and the export performance.

Table no.3.30: Analysis for sub-Hypothesis 7 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.111	.621

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will accept the null hypothesis, meaning; there is no statistical significant relationship between the distribution and export performance (taken together). (Since P value is more than .05).

Null hypothesis no. 8 (Ho8): There is no statistical significant relationship between the quality of the product and the export performance.

Table no.3.31: Analysis for sub-Hypothesis 8 (using Pearson Correlation test)

Pearson Correlation	Sig. (2-tailed)
.514**	.014

***Correlation is significant at the 0.05 level (2-tailed)*

To test this hypothesis using Pearson Correlation test, according to the SPSS analysis, we will reject the null hypothesis, meaning; there is a significant positive relationship between the product (quality) and export performance (taken together).

In addition to the previous tests which were used to test the main and the sub-hypotheses, the researcher used Paired sample T test to compares the means of two variables (one independent and dependent variables) and to calculate the correlation between these two variables.

Table no 3.32: Paired Samples Correlations

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	R&D – Export performance	22	.626	.002
Pair 2	Financing & taking risks - Export performance	22	.664	.001
Pair 3	Product (Quality) - Export performance	22	.514	.014
Pair 4	Management - Export performance	22	.608	.003
Pair 5	Marketing data base - Export performance	22	.531	.011
Pair 6	Pricing - Export performance	22	.457	.033
Pair 7	Promotion - Export performance	22	.519	.013
Pair 8	Distribution - Export performance	22	.608	.003
Pair 9	Innovation - Export performance	22	.656	.001

According to the above table, there are strong positive correlations between all independent variables and the dependent variable. P value is less than .05 for all correlations (significant differences)

And finally the researcher mentioned the inferential statistics:

Table no. 3.33: Paired Samples T test:

Paired Samples Test							
		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	R&D – Export performance	1.75455	.58613	.12496	14.040	21	.000
Pair 2	Financing & taking risks - Export performance	1.12500	.54962	.11718	9.601	21	.000
Pair 3	Product (Quality) - Export performance	2.10000	.64291	.13707	15.321	21	.000
Pair 4	Management - Export performance	1.45455	.55171	.11762	12.366	21	.000
Pair 5	Marketing data base - Export performance	1.59596	.59371	.12658	12.608	21	.000
Pair 6	Pricing - Export performance	2.11818	.62916	.13414	15.791	21	.000
Pair 7	Promotion - Export performance	2.12879	.64433	.13737	15.497	21	.000
Pair 8	Distribution - Export performance	1.56818	.55195	.11768	13.326	21	.000
Pair 9	Innovation - Export performance	1.73065	.52342	.11159	15.509	21	.000

Since the P value (Sig. (2-tailed)) is less than .05 for all pairs, so all null hypotheses are rejected and there are significant relationships between all independent variables and the dependent variable.

Table no 3.34 below, summarizes the results of the hypotheses testing:

Table no. 3.34: Hypotheses Testing Summary

Hypotheses (Ho)	**Results taken separately**	**Results taken together**
Main hypotheses: Null hypothesis (Ho): There is no statistical significant relationship between innovation and the export performance.	Rejected	N.A.
Sub-hypotheses: Null hypothesis no. 1 (Ho1): There is no statistical significant relationship between the research and development and the export performance.	Rejected	Rejected
Sub-hypotheses: Null hypothesis no. 2 (Ho2): There is no statistical significant relationship between the financing and taking risks and the export performance.	Rejected	Accepted
Sub-hypotheses: Null hypothesis no. 3 (Ho3): There is no statistical significant relationship between the marketing data base and the export performance.	Rejected	Rejected
Sub-hypotheses: Null hypothesis no. 4 (Ho4): There is no statistical significant relationship between the management and the export performance.	Rejected	Rejected
Sub-hypotheses: Null hypothesis no. 5 (Ho5): There is no statistical significant relationship between the pricing and the export performance.	Accepted	Accepted
Sub-hypotheses: Null hypothesis no. 6 (Ho6): There is no statistical significant relationship between the promotion and the export performance.	Accepted	Rejected
Sub-hypotheses: Null hypothesis no. 7 (Ho7): There is no statistical significant relationship between the distribution and the export performance.	Accepted	Accepted
Sub-hypotheses: Null hypothesis no. 8 (Ho8): There is no statistical significant relationship between the quality of the product and the export performance	Rejected	Rejected

Chapter Four:

1. Research results
2. Recommendations for future research
3. Conclusion

4.1 Research findings and results:

A summarization of the main research results and findings are discussed below:

Research findings indicate that there is a statistical significant relationship between innovation and export performance for the sample under study which is consistent with Lachenmaier and Woessman (2004).

Findings indicate that there is a relationship between research and development and export performance, which is supported by literature (Helfat, 1994), so R&D is therefore viewed as one of the prime factors influencing of export performance. The positive relationship between R&D and exports in small firms has been demonstrated by Ong and Pearson (1984). Moreover, SME exporters conduct more R&D (Baldwin et al., 1994) and produce more patents (Moini, 1995).

Findings indicate that there is a relationship between the financing and taking risks and the export performance. This was supported in the literature (Wakelin, 1998) and Al-Sarhan (2005).

Findings indicate that there is a relationship between the marketing data base and the export performance, since marketing intelligence and marketing research plays an essential role in the performance of the companies, and this is supported in the previous studies (Olsen *et al*, 2006).

Findings indicate that there is a relationship between the management and the export performance. Atmosphere conductive to innovation is essential part of the innovation creation. The literature on firm-level determinants of export performance and behaviour is extremely rich (Chetty and Hamilton, 1993) and covers a wide spectrum of issues, such as

the relative importance of firms' demographics (Bonaccorsi, 1992; Wagner, 1995) or the relative impact of the beliefs, attitudes and perceptions of top management (Bijmolt and Zmart, 1994).

Findings indicate that there is no statistical significant relationship between the pricing and the export performance. This result is not consistent with the opinion of Wakelin (1998) who states that, in addition to relative prices, differences in terms of innovation can significantly influence the performance of exports, either by direct impact of being an innovative company, whether through knowledge spillovers. According to economic theory it is expected that the propensity to be innovative is increasing function of firm size, human capital, investment (including prices) and exports.

Findings indicate that there is no statistical significant relationship between the promotion and the export performance. This result is not consistent with the opinion of Wilkinson etal (2006) who related export promotion to the export activities, and Kokko (2009) confirmed that.

Findings indicate that there is no statistical significant relationship between the distribution and the export performance. This result is not consistent with the opinion of Al-Sarhan (2005). Melitz (2003) and Bernard et al. (2003) attempted to formulate theories consistent with the empirical facts connecting export behaviour and productivity of firms. Both theories start with firms receiving a draw from a distribution that determines their productivity.

Findings indicate that there is a statistical significant relationship between the quality of the product and the export performance. Anderton (1999a, b) considered the impact of R&D and patenting activity on trade volumes and prices arguing that both technology indicators

act as proxies for the quality and/or variety of goods being produced. However, not all evidence points in the same direction. Ito and Pucik (1993) have an opposite opinion.

4.2 Recommendations for Future Research:

To the best knowledge of the researcher, few researches are available in Jordan regarding innovation and export performance; hence numerous recommendations for future research exist, mainly based on the limitation of this research study.

First of all, as noted earlier this research study aimed on getting a general idea of the relation of innovation and export performance, hence focused on a limited number of innovation variables. Clearly, innovation includes a wide array of variables; undoubtedly a study with a wider range of variables would provide greater understanding and more generalization that found in the present investigation.

Likewise, this research studied innovation antecedents in general; future studies could identify more antecedents of innovation that were uncovered in this study. In addition research is needed to focus more specifically on analyzing the driving factors of innovation realization or the characteristics of innovative companies.

Moreover it will be beneficial to examine the consequences of innovative strategies on companies' performance (export, profitability, market share, sales, etc.). Also future studies could explore the obstacles, problems and difficulties that hinder companies from implanting innovative strategies.

It is advised to replicate the present study on a larger sample of companies and apply this framework to more sectors to provide more generalization that found in this study, and to see if the results obtained here are confirmed on all sectors. In addition the current study

could be replicated on the entire population of a specific manufacturing sector setting, for example on food and beverage sector or on textile sector.

Finally, future replications and longitudinal study would be particularly useful, to provide supporting evidence for substantive relationships, also they would permit examination of the evolution of the relations, as well as dynamic comparisons.

4.3 Recommendations for companies:

The companies should collaborate with scientific research institutes and universities to develop new ideas, since the results of this research show weak collaboration. Universities are a rich source for new ideas, and this is a missed opportunity for most of Jordanian chemical and pharmaceutical industries.

The above collaboration should include funds for the scientific research which is relevant to the companies' field.

An area for improvement for most of Jordanian chemical and pharmaceutical companies is to invest in certain markets or fields where competitors failed.

Innovative products play a major role in the export activity for the company, so it is highly recommended that companies should have innovative products in their portfolio, either from its own or by licensing agreement.

Education of employees is essential. Give them resources so that they clearly understand expectations and can perform their job with personal and professional satisfaction.

Over recent years internal marketing has increasingly been integrated with employer branding, and employer brand management, which strives to build stronger links between the employee brand experience and customer brand experience. According to Burkitt and Zealley, "the challenge for internal marketing is not only to get the right messages across, but to embed them in such a way that they both change and reinforce employee behavior". So companies should focus on internal marketing and start to implement it.

4.4 Conclusion:

In this research, we examine the relationship between innovation and export activities at the firm level. We use eight measures of innovation, namely research and development, financing and taking risks, management (atmosphere conductive to innovation), marketing data base, pricing, promotion, distribution and the quality of the product.

Our findings highlight that there is a positive link between innovation and export performance, positive links between research and development, financing and taking risks, management (atmosphere conductive to innovation), marketing data base and the quality of the product are found. No statistical significant relationships between pricing, promotion, and distribution with the export performance.

Our results have important implication in the context of Jordan. That is, on top of the comparative advantages that push Jordanian’s export, a policy to encourage innovation activities by companies should be in place.

This research confirms that boosting firm's competitiveness through fostering innovation cause export growth.

REFERENCES:

Abernathy WJ and Clark KB (1985) **Innovation: Mapping the winds of creative destruction**. Research Policy. 14: 3-22.

Acs, Z. J. and Audretsch, D. B. (1990), **Innovation and Small Firms**, The MIT Press, Cambridge, Mass., USA.

Adler, P. S. and Shenbar, A. (1990). **Adapting your technological Base: The Organizational Challenge**. Sloan Management Review, 25: 25-37.

Afuah N, and Bahram N (1995) **The hypercube of innovation**. Research Policy 24: 51-76.

Aggarwal, Raj and Kyaw Nyonyo (2008) " **Internal Capital networds as a source of MNC competitive advantage: Evidence from foreign subsidiary structure decisions**," Research in International Business and Finance 22: 409-439.

Andriopoulos, C. and Dawson, P. 2009, **Managing Change, Creativity, and Innovation**, Sage Publications, London.

Anh. et al. (2007). **Innovation and Export of Vietnam's SME Sector** [online] Available http://mpra.ub.uni-muenchen.de/3256/

Atalla Al- Serhan. (2005). **The Role of Marketing Innovation and Creativity In the Achievement of a Competitive Advantage for the Jordanian Commercial Banks**. Unpublished doctoral dissertation, Amman Arab University For Graduate Studies.

Attewell, P. (1992). **Technology Diffusion and Organizational Learning, The Case of Business Computing.** Organization Science, V3

Bernard, A. B., Jensen, J. B., Redding, S. J., and Schott, P. K. (2007). **Firms in international trade**. Journal of Economic Perspectives, 21(3), 105–130.

Booz-Allen and Hamilton Inc (1982), **New Product Management for the 1980s**. New York.

Business Wire. (2008). **Jordan Pharmaceuticals and Healthcare Report Q2 2008 Provides Competitive Intelligence** [online] Available http://www.researchandmarkets.com/reports/c91542

Cao. et al. (2006). **Innovation in China's furniture industry**. Forest Products Journal, Wednesday, November 1 2006. [online] Available http://www.allbusiness.com/forest-products-journal/41104-1.html

Carlos M. P. Sousa. (2004). **Export Performance Measurement: An Evaluation of the Empirical Research in the Literature** , Thursday, January 1 2004. [online] Available http://www.allbusiness.com/academy-of-marketing-science-review/3476553-1.html

Cassiman, Bruno and E. Martínez-Ros (2007) **Product Innovation and Exports: Evidence from Spanish Manufacturing**, IESE Business School and CEPR, 1-37.

Chadha, Alka (2009) "**Product Cycles, Innovation and Exports: A Study of Indian Pharmaceuticals**," Word Development Vol.37, 1478-1483.

Clarke, L. (1994), **The Essence of Change**, 1st edn, Prentice Hall Europe, Hertfordshire.

Cooper RG (2001) **Winning at New Products - Accelerating the Process from Idea to Launch**. 3rd Edn. Product Development Institute.

Cumming BS (1998) **Innovation Overview and Future Challenges**. European Journal of Innovation Management 1(1): 21-29.

Damijan, Joze P. and C. Kostevc (2006) "**Learning-by- Exporting: Continuous Productivity Improvements of Capacity Utilization Effects? Evidence from Slovenian Firms**," Review World Economics, Vol. 142 (3), 599-613.

Diana-Andreea Filipescu. (2007). **Innovation and Internationalization. A focus on the spanish exporting firms.** Unpublished doctoral dessirtation, Autonomous University of Barcelona.

Drucker P (1993) **Innovation and Entrepreneurship**. 1st Edn. Collins.

Fernandez, I. B. COnzalez ,A. and Sabherwal ,R.(2004) . **knowledge management challenges, solutions, and technologies** : ,Pearson Education ,Inc., New jersey, United states of America .

Freeman C and Soete L. (1997) **The Economics of Industrial Innovation**. Pinter, London. 3rd Edn.

Graetz, F., Rimmer, M., Lawrence, A. and Smith, A. 2006, **Managing Organisational Change,** 2nd Australasian edn, John Wiley &Sons, Australia.

Grossman, G. and E. Helpman (1991), **Innovation and Growth in the Global Economy**, Cambridge.

Gruber, William, Dileep Mehta and Raymond Vernon (1967). **The R&D Factor in International Trade and International Investment of United States Industries**. Journal of Political Economy 75 (1): 20-37.

Haddad and Al-Ghadeer. (2003). **Marketing innovation and creativity in pharmaceutical and medicinal industry**. Jordan journal of applied science, 7 (1), 77-96.

Henderson RM and Clark KB (1990) **Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms**. Administrative Science Quarterly. 35:9-30.

Henry, J. and Mayle, D. (eds) 2002, **Managing Innovation and Change**, 2nd edn, SAGE Publications, London.

Huergo, Elena (2006) "**The Role of tecnological management as a source of innovation: Evidence from Spanish manufacturing firms**," Reserch Policy 35, 1347-1388

Ito, K. and Pucik, V. (1993), "**R&D spending, domestic competition, and export performance of Japanese manufacturing firms**", Strategic Management Journal 14, 61-75.

James, Brian. And Quinn . (1986). **Innovation and corporate strategy, managed chaos. In technology inn the modern corporation : A strategic perspective**. New York, NY Pergamon Press. 170.

Jane Olsen, Boon-Chye Lee and Ann Hodgkinson. (2006). **Innovation in Small and Medium-Sized Enterprises: A Study of Businesses in New South Wales, Australia** [online] Available http://www.uow.edu.au/commerce/econ/wpapers.html

Jordanian National Chemical profile, Third edition (2006)

Jordan Pharmaceutical Sector, **Global Investment House KSCC**, (June 2007)

King, N. and Anderson, N. 2002, **Managing Innovation and Change: A Critical guide for Organizations**, 2nd edn, Thomson, London.

Lachenmaier, S. and L. Woessmann (2004) **Does Innovation Cause Exports? Evidence from Exogenous Innovation Impulses and Obstacles Using German Micro Data**. CESifo Working Paper No.1178

Lee, Jooh and Habte-Giorgis, Berhe. (2004). **Empirical Approach to the Sequential Relationships between Firm Strategy, Export Activity, and Performance in US Manufacturing Firms.** International Business Review, 13: 101-129.

Lock, E. and Kirkpatrick, S., 1995, **promoting creativity in Organizations in Creative action in organizations: ivory tower visions & real world voices, eds. C.M. Ford & D.A**. Gioia, Sage Publications, Thousand Oaks, Calif.

Loof, Hans (2009) “**Multinational Enterprises and Innovations: firms level evidence on spillover via R&D collaboration**”, J Evol Econ, Springer, 41-71.

Markusen, J. (1995). “**The Boundaries of the Multinational Enterprises and the Theory of International Trade**, Journal of Economic Perspectives, 9, 169-189.

Micheal McCoy, et al., "**Facts & Figures of the Chemical Industry**", Chemical & Engineering News, 84(29), July 10, 2006, 35-72.

Mowday, R. and Sutton, R. 1993, "**Organizational Behaviour: Linking Individuals and Groups to Organizational Contexts**", Annual Review Psychology, vol. 44, no. 1, 195-229.

Myers and Matthew B. (1999). **Incidents of Gray Market Activity Among U.S. Exporters: Occurrences, Characteris-tics, and Consequences**. Journal of International Business Studies 30 (1): 105-26.

Namiki. (1989). **The impact of competitive strategy on export sales performance: an exploratory study.** Mid-Atlantic Journal of Business, April 1 1989 [online] Available http://www.allbusiness.com/marketing/market-research/112901-1.html

OECD (2005) **Proposed Guidelines for Collecting and Interpreting Technological Innovation available**. Oslo Manual, available at http://www.oecd.org/ document/ 1/0,2340,en_2649_201185_33847553_1_1_1_1,00.html.

Olszewki, Krzysztof (2008) **International Trade and Endogenous Growth – A survey on the Grossman and Helpman models and a recent extension**, University of Southampton, Department of Economics, Working Paper, July, 1-14

Ozçelik, Emre and Erol Taymaz (2004) "**Does Innovativeness matter for international competitiveness in developing countries? The Case of Turkish Manufacturing Industries**," Research Policy 33, 409-424

Paton, R. and McCalman, J. 2001, **Change Management: A guide to effective implementation,** 2nd edn, SAGE Publications, London.

Paul A. Geroski. (1995). **Innovation and Competitive Advantage** [online] Available http://ideas.repec.org/p/oec/ecoaaa/159-en.html

Phapruke Ussahawanitchakit. (2007). **Innovation capability and export performance: an empirical study of textile businesses in Thailand**. International Journal of Business Strategy, Jan, 2007 [online] Available http://findarticles.com/p/articles/mi_6766?tag=artBody;col1

Pope, W. and Keck, S.(1999). **Building a Dynamic Network of Latent Experts: Computer Conferencing in a Global Technology Firm**, 19 Annual International Conference, Strategic Management Society.

Radu Chiru. (2003). **Innovativeness and export orientation among establishments in Knowledge-Intensive Business Services (KIBS)** [online] Available http://www.statcan.ca

Rogers, M. (1998), **The Definition and Measurement of Innovation**, Melbourne Institute Working Paper No. 10/98.

Rogers, M. (1962), **Diffusion of Innovations**. Free Press.

Romer, P. (1986), **Increasing Returns and Long-Run Growth**, Journal of Political Economy, 94, 1002-1037.

Roper, Stephen and James Love (2002) "**Innovation and Export performance: Evidence from UK and German Manufacturing Plants,**" Research Policy 31, 1087-1101

Schacht WN (2000) **The National Council for Science and the Environment, Industrial Competitiveness and Technological Advancement: Debate Over Government Policy**, Brief for US Congress.

Schumpeter JA (1939) **Business Cycles**. McGraw-Hill Books Co. New York. 87-88.

Sekaran ,U. (1992). **Research Methods for Business: A skill Building Approach** ,Second Edtion , alynow university press, USA; 285-301.

Senior, B. (2002), **Organisational change,** 2nd edn, Pearson Education Limited, England.

Sennett, J. and Wood P. (2000). **Innovation and Knowledge Transfer** , Conference Held at Middlesex University, Business School, Hendon Campus.

Soete, and Luc L.G. (1981). **A General Test of Technological Gap Trade Theory**. Weltwirtschaftliches Archiv 117 (4): 639-659.

Tidd, J. Bessand and J. and Pavitt, K (1997), **Managing Innovation: Integrating Technological,** Market and Organizational Change, John Wiley & Sons, New York

Timothy Wilkinson and Lance Eliot Brouthers, (2006). "**Trade promotion and SME export performance**", International Business Review, Volume 15, Issue 3, June 2006, 233-252.

Vernon, Raymond (1966) "**International investment and international trade in the product cycle**",Quartely Journal of Economics 80, 190-207.

Wakelin, K. (1998). **Innovation and export behaviour at the firm level**. Research Policy, 26: 829–841.

Weick, K., E. and Quinn, r., E. 1999, "**Organizational Change and Development**", Annual Review Psychology, vol. 50, 361-386.

West, M.A. and Altink, W.M.M. 1996, "**Innovation at Work: Individual, Group, Organizational, and Socio-historical Perspectives**", European Journal of Work and Organizational Psychology, vol. 5, no. 1, 3-11.

Wolter, F. (1977), **Factor Proportions, Technology and West German Industry's International Trade Patterns**, Weltwirtschaftliches Archiv 113, 250-267.

Woodman, R. and Dewett, T. 2004, "**Organizationally Relevant Journeys in Individual Change**" in Handbook of Organizational Change and Innovation, eds. M.S. Poole & Vand De Ven, Andrew H., 1st edn, Oxford University Press, New York, 32-49.

Innovation concept adapted from www.innovation.gov.uk/rd_scoreboard/executive.asp (Online)

Innovation concept adapted from Productscan; www.productscan.com (online)

Appendix:

Today's Date:

Questionnaire

The following questionnaire has been prepared for research purposes of pursuing a master's thesis. The study aims to explore the relationship between innovation and export performance. Please do not type your name on the template since all responses are confidential and will be used for statistical purposes only. Kindly note that the questionnaire is strictly voluntary; do not feel obligated to take part if you are uncomfortable to do so.

Thank you for your cooperation, your honesty would be appreciated.

Personal Background:

- Gender:
  □ Male □ Female

- Age:
  □ Under 25 Years □ Between 25-29
  □ Between 30-40 □ over 40

- Educational level:
  □ PhD □ Masters
  □ Bachelor □ Diploma

- I have been working in the company for :
  □ Less than 1 year □ 1 year – 5 years
  □ 6 years - 10 years □ more than 10 years

- My employment level is :
  □ High-management level □ Middle-management level
  □ Low-management level □ Operational-technical employee

- Please specify your Department ______________________

Company Background:

1. Export intensity: the proportion of total company revenues derived from export activity is:
   □ Less than 5% □ 5% - 10%
   □ 11% - 50% □ More than 50%

2. Export growth rate: the degree of growth in export over the last three years is:
   □ Less than 1% □ 1% - 5%
   □ 5% - 10% □ More than 10%

3. No. of R&D staff to the total no. of company's staff is:
   - □ Less than 0.5%
   - □ 0.5% - 1%
   - □ 1% - 5%
   - □ More than 5%

4. Percentage of expenditure allocated to R&D department is:
   - □ Less than 1%
   - □ 1% - 5%
   - □ 6% - 10%
   - □ More than 10%

5. No. of years working in the business:
   - □ Less than 1 year
   - □ 1 year – 5 years
   - □ 6 years – 10 years
   - □ More than 10 years

6. No. of years with export activity:
   - □ Less than 1 year
   - □ 1 year – 5 years
   - □ 6 years – 10 years
   - □ More than 10 years

7. Total no. of employees:
   - □ Less than 100
   - □ 100 – 500
   - □ 501 – 1000
   - □ More than 1000

8. Type of the company:
   - □ Public Limited Liability Company or PLC
   - □ Limited Liability Company or LLC
   - □ General partnership
   - □ Limited partnership
   - □ Sole trader
   - □ Co-operative
   - □ Limited Liability Partnership

Research and Development (R&D):

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company works continuously to launch new products					
2	The company works on improving its existing products					
3	The company adopts new scientific progress in its field					
4	The company has a specialized R&D department					
5	The company collaborate with scientific research institutes and universities to develop new ideas					

Financing and taking risks:

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company has a specialized team looking for new opportunities					
2	The company funds scientific research which is relevant to its field					
3	Flexibility of budgeting for R&D department					
4	The company invests in certain markets or fields where competitors failed					

Product (Quality):

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company develops and modifies its products according to its customers needs					
2	The company provides different products for different market segments					
3	There is correlation between the price and the quality of the company's products					
4	The company complies with international quality certification (ISO, FDA, MHRA, …etc)					
5	The company has innovative products					

Management:

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company holds training sessions for the staff encourage the innovative thinking					
2	The company grants incentives for employees with innovative ideas					
3	The company considers creativity and innovation as essential factors in appraisal for staff performance					
4	Hierarchy of the company helps in the creativity and innovation of employees					
5	The company provides a sort of decentralization which helps the generation of new ideas					
6	The extent of cooperation within the team and between different teams					
7	There is a specific department that influences the investment decision of the company					
8	The company relies on internal marketing to promote its new ideas and products					

Marketing data base:

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company follows local competitor's activities					
2	The company follows international competitor's activities					
3	The company has integrated information system for new ideas and suggestions					
4	The company has updated technology infrastructure					
5	The company deals with neutral third party for market research purposes					
6	The company has a specialized market research team					
7	The company has a specialized marketing intelligence team					
8	The company uses the collected and analyzed data efficiently in the market					
9	The company utilizes new tools for obtaining marketing data base (e.g: customer relationship management "CRM")					

Pricing:

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company uses different pricing strategies in different situations					
2	The company takes competitors prices into consideration when pricing its new products					
3	The price of the products is relevant to innovation vision of the company					
4	The company uses cost minimization systems to have a competitive price in the market					
5	The company is able to deliver the maximum perceived value for its product with the minimum price relative to competitors					

Promotion:

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company applies different promotional tools in promoting its products					
2	Sales promotion, media, events and experience, PR, direct marketing					
3	There is an alignment and integration between the different promotional tools used by the company					
4	The company applies new ideas of marketing communication for promotion					
5	The company links the promotional tools together to reflect a high quality product					
6	The company has a specialized team for designing and executing promotional tools					

Distribution:

No.	Question:	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company faces regulatory restrictions in different markets					
2	The company uses other companies existing infrastructure to distribute its products					
3	The mother company grants facilities to distributing agents					
4	The company uses many distributors so that it can reach all customers segments					

تأثير الإبتكار في الصناعات الكيميائية و الدوائية الأردنية على الأداء التصديري

إعداد

ابراهيم محمد عيسى

المشرف

الأستاذ الدكتور هاني الضمور

الملخص

يعتبر الابتكار عاملا هاما لخلق القدرة التنافسية للشركات و الحفاظ عليها، ومن المعروف ان يمثل الابتكار سببا في زيادة الصادرات. ومع ذلك، فإن الأدلة التجريبية التي ذكرت في الأدبيات حول العلاقة بين الابتكار والأداء التصديري منها ما يتعارض ويتخالف بالنتائج. سندرس في هذا البحث ما إذا كان الابتكار في مجال الصناعات الكيميائية والدوائية يعزز الأداء التصديري.

بناءً على الأهداف السابقة، تم تطوير استبيان لجمع البيانات اللازمة لاختبار الفرضيات .و قد تم توزيعه على الشركات الكيميائية والدوائية ذات النشاط التصديري، وقد تم إسترداد اثنان و عشرون استبيان، حيت تكون نسبة الاستجابة الفعلية 65 % من حجم مجتمع الدراسة. وقد تم تحليل البيانات وجرى اختبار الفرضيات باستخدام طرق التحليل المختلفة.

تشير نتائج البحث إلى وجود علاقة ذات دلالة إحصائية بين الابتكار والأداء التصديري للعينة قيد الدراسة، خصوصاً للبحث والتطوير، وتوفر قاعدة بيانات تسويقية، وإدارة مشجعة للإبتكار والترويج وجودة المنتج. واستنادا إلى نتائج الدراسة تم اقتراح عدة توصيات.